Subject Index to Volume 3

Absorption: *see* specific substance or site
Acetylsalicylic acid esterase
  gastric mucosa, E606
Acetylsalicylic acid hydrolase
  gastric mucosa, E606
Acid
  gastric: *see* Gastric acid; Gastric secretion
Acid-base balance
  insulin secretion and, E426
Acidosis
  glutamine metabolism (sheep), E197
ACTH: *see* Adrenocorticotropin
Action potentials: *see* Potentials
Acyl donor
  fatty acid esterification, E236
Acyl receptors
  fatty acid esterification, E236
Adenine nucleotide
  levels, soleus muscle, E407
Adenosine monophosphate, cyclic
  glycogen metabolism, hepatic, in diabetes, E13
  insulin release, isolated islets, E527
Adenosine triphosphatase: *see* Sodium-potassium-ATPase; Magnesium-ATPase
Adenosine triphosphate
  insulin-stimulated sugar transport, soleus muscle, E407
Adipocytes: *see* Fat cells
Adipose cells: *see* Fat cells
Adipose tissue
  genetic obesity, development, E568
  lipid metabolism, portacaval diversion effects, F579
Adrenal cortex
  circadian rhythm differences, mutual influence, E515
Adrenal glands
  renal hypertension, E267
Adrenal medulla
  biosynthesis, development (swine), E137
  dopamine β-hydroxylase secretion (bovine), E600
  enzymes, E137
  epinephrine secretion (bovine), E600
  function, development (swine), E137
Adrenal steroids
  renal hypertension, E267
Adrenalectomy
  renal hypertension, E267
Adrenergic blockade: *see* Blockade
Adrenergic mechanism
  α- and β-, balance, insulin secretion modulation, E106
Adrenergic modulation
  insulin secretion, thyroid states, E106
Adrenergic physiology
  norepinephrine, hormonal and neurotransmitter functions, E252
Adrenergic receptors: *see* Receptors
Adrenergic stimulation
  circulation, mesenteric (baboon), E457
Adrenocortical processes: *see* Adrenal cortex
Adrenocorticotropin
  permeability, plasma/cerebrospinal fluid barrier, E327
Alanine
  oxidation, carnitine effects, liver and skeletal muscle, E494
Albumin
  microspheres, ^{99m}Tc-labeled, bile secretion, liver, hemodynamics, E584
Aldosterone
  acid-labile conjugate, E472
  metabolism, diuretic effects, E482
  metabolism, perfused kidney, E472
  metabolites, production rate, kidney, E472
  renal handling, E472
  urinary excretion rate, E472
Aliphatic esterase
  gastric mucosa, E606
Allantoin
  uric acid metabolism, muscular dystrophy, E421
Alloxan diabetes: *see* Diabetes
Amiloride
  sodium ion transport, stomach (mammalian), E228
Amino acids
  absorption, ileum, newborn, E257
  branched-chain, fetal heart, E306
  gastric secretion, intestinal phase, E64
  metabolism, fetal heart, E306
  oxidation, carnitine effects, liver and skeletal muscle, E494
Aminopyrine
  electrophysiology and secretion, stomach (frog), E120
Androgens
  sexual maturation, male, in continucus light, E262
Angiotensin
  production, fatty acids and, E593
Angiotensin antagonists
  renal hypertension, E267
Anoxia
  sugar transport, insulin-stimulated, ATP effects, soleus muscle, E407
Antral pouch
  esophageal sphincter regulation, E157
Antrectomy
  gastric emptying, E375
Antrum
  gastric, regulation, lower esophageal sphincter, E157
  pyloropancreatic reflex, E468
Apparatus and technique: *see* specific subject or site
Appetite: *see* Feeding
L-Arabinose
  transport, adipocytes, E112
  uptake, adipocyte glucose transport measurement, E112
Arginine
  glucagon and glucose turnover, extrapancreatic, E213
  insulin secretion and acid-base alterations, E426
Arsenic
  excretion, biliary, metallothionein effects, E47
Artifacts
  brain removal technique, E365
Atropine
  bicarbonate secretion, gastric, E535
  pressure, lower esophageal sphincter (opossom), E301
Autonomic drugs
  electromyogram, colon, E641
Autoregulation
  glucose uptake, midterm fetal liver, E560

Bases
  weak, electrophysiology and secretion, stomach (frog), E120
Bicarbonate
  pyloropancreatic reflex, E468
  secretion, gastric, E535
  secretion, pancreas, E286
Bile
  cholereses, taurocholate- and secretin-induced, E146
  erythritol clearance, induced cholereses, E146
  mannitol clearance, induced cholereses, E146
  secretion, hemodynamic effects, liver, E584
  vitamin K_1 transport, E54
Bile acids
  hydroxy and keto, comparison, E637
  sham feeding and, E417
  structure, biliary lipid secretion and, E637
Bile flow
  taurocholate- and secretin-induced cholereses, E146
Bile salt
  excretion, taurocholate- and secretin-induced cholereses, E146
Biliary excretion
  metals, metallothionein effects, E47
Biliary secretion
  sham feeding and, E417
Bladder: *see* Gallbladder; Urinary bladder
Blindness
  circadian rhythm, adrenocortical, E515
Blockade
  adrenergic, mesenteric circulation (baboon), E457
  adrenergic, insulin secretion modulation, dependence on thyroid states, E106
Blood flow: *see also* Circulation
  capillary, hypoxia, E248
  hepatic, bile secretion and, E584
  intestinal, hypoxia, E248
  mesenteric, adrenergic mechanisms (baboon), E457
  mesenteric, histamine receptors, E370
Body composition: *see* specific constituent
Body weight: *see* Weight
Bone
  medullary, vitamin D metabolism (quail), E622
  red cell space, hypocalcemic femur, E6
Brain removal technique
  artifact, E365
  glucose, E365

Brush border membrane
glucose carrier, sodium ion-dependent, renal cortex, E1
Bypass: *see* Shunt

Cadmium
uptake, hepatic, metallothionein effects, E47
Cadmium thioneins
hepatic, hypozincemia associated with bacterial infection, E399
Calcium
dietary, vitamin D metabolism (quail), E622
red cell space, hypocalcemic bone, E6
Capillaries
blood flow: *see* Blood flow
density, hypoxia, E248
Carbachol
bicarbonate secretion, gastric, E535
Carbon dioxide
production, paraquat-perfused lung, E653
tension, intragastric, bicarbonate secretion and, E535
Carnitine
amino acid oxidation, liver and skeletal muscle, E494
Carnithine acyltransferase
amino acid oxidation, liver and skeletal muscle, E494
Catecholamines
adrenal medullary function, development (swine), E137
circulation, mesenteric (baboon), E457
dopamine β-hydroxylase secretion, adrenal (bovine), E600
epinephrine secretion, adrenal (bovine), E600
hormonal and neurotransmitter function, E252
insulin secretion, adrenergic modulation, E106
Cathepsin D
fetal heart, E306
skeletal muscle, E38
Cerebrospinal fluid: *see* Fluid
Chenodeoxycholic acid
biliary lipid secretion, E637
Cholecystitis
fluid transport, gallbladder mucosa, E575
Cholecystokinin
gastric emptying, inhibition, E375
trophic action, pancreas, E286
Cholecystokinin octapeptide
smooth muscle response, gallbladder, E44
Cholelithiasis
fluid transport, gallbladder mucosa, E575
Choleresis
bile, taurocholate- and secretin-induced, E146
Cholesterol
biliary lipid secretion, E637
Cholic acid
biliary lipid secretion, E637
Cholinergic augmentation
pressure, esophageal sphincter (opossum), E301
Cholinergic inhibition
pressure, esophageal sphincter (opossum), E301
Cholinergic mechanisms
acid secretion and motility, gastric mucosa (kitten, ferret), E319
Choroid plexus
permeability, plasma/cerebrospinal fluid barrier, E327
Chromaffin tissue
dopamine β-hydroxylase secretion (bovine), E600
epinephrine secretion (bovine), E600
Cimetidine
gastric secretion inhibition, oxygen consumption and, E445
Circadian rhythm: *see* Rhythm
Circulation: *see also* Blood flow
mesenteric, adrenergic mechanisms (baboon), E457
mesenteric, histamine receptors, E370
Colon
intrinsic nerves, electromyogram, E641
Compartments
glucose turnover, nonsteady state, model, E84
Conceptus: *see* Fetus; Placenta
Conductance
shunt, sodium ion, stomach (mammalian), E228
Contractility, Contraction: *see* Muscle
Copper
excretion, biliary, metallothionein effects, E47
Corticosteroids
binding, globulins, in pregnancy (monkey), E489
Corticosterone
plasma, adrenocortical circadian rhythm, E515
Cyclic AMP: see Adenosine monophosphate, cyclic
Cytochalasin B
glucose transport, adipocytes, E112

Dehydrocholate
hemodynamic effects on bile secretion, liver, E584
2-Deoxy-D-glucose
feeding, behavioral response, E20
feeding, glucoprivic, behavior, E617
Dexamethasone
glutamine metabolism (sheep), E197
glucose transport, adipocytes, E112
Diabetes
alloxan, enzymes, glucose regulation, E13
alloxan, glycogen metabolism, liver, E13
amino acid oxidation, carnitine effects, liver and skeletal muscle, E494
extrapancreatic glucagon and glucose turnover, E213
Diet: *see* Feeding
1,25-Dihydroxyvitamin D_3
metabolism (quail), E622
24,25-Dihydroxyvitamin D_3
metabolism (quail), E622
Disaccharidase
circadian rhythms, postnatal development, small intestine, E500
Dispersion models
glucose turnover, nonsteady state, E84
Dopamine β-hydroxylase
secretion, adrenal (bovine), E600
Duodenum
gastrointestinal hormone, muscular responses (opossum, cat), E60
motility: *see* Motility
Dystrophy, muscular: *see* Muscular dystrophy

Edrophonium
pressure, lower esophageal sphincter (opossum), E301
Electromyogram
colon, intrinsic nerves, E641
Electrophysiology
colon, intrinsic nerves, E641
spike bursts, oviduct, E430, E439
stomach, inhibitor and weak bases (frog), E120
Energetics
membrane transport, gastric, E445
Energy expenditure
monosodium glutamine-induced obesity, neonatal, measurement, E532
Entrainment
mutual, adrenocortical activity, E515
Enzymes: *see* specific enzyme or site
Epinephrine
secretion, adrenal (bovine), E600
Epithelium
intestinal, phosphate transport, vitamin D-dependent (chick), E379
Erythritol
clearance, biliary, induced choleresis, E146
Erythrocytes
polyamines, pregnancy and lactation, E451
space, hypocalcemic bone, femoral, E6
Esophageal sphincter, lower
gastric antrum regulation, E157
inhibition by female sex hormones (opossum), E243
noncholinergic, nonadrenergic inhibitor neuron (opossum), E273
pressure, cholinergic augmentation and inhibition (opossum), E301
pressure, pentagastrin effects (opposum), E301
vagal inhibitory pathway, 5-hydroxytryptamine participation (opossum), E273
vagal stimulation (opossum), E359
vagotomy effects (opossum), E359
Esophagostomy
Komarov-type, esophageal sphincter regulation, E157
Esophagus
function, thoracic vagotomy (opossum), E359
function, vagal stimulation (opossum), E359
manometry, rapid pull-through, E157
peristalsis, vagal innervation (opossum), E359
Esterase
aliphatic, gastric mucosa, E606
Esterification
fatty acid: *see* Fatty acids
Estrogen
fetal developmental effects (pig), E190
lower esophageal sphincter muscle inhibition (opossum), E243
spike bursts, oviduct, E439
vitamin D metabolism (quail), E622
Exercise
chronic, triglyceride reduction, E221
growth hormone, E611

growth, somatic, E611
insulin and, E611

Fasting
amino acid oxidation, carnitine effects, liver and skeletal muscle, E494
gastric emptying, glucose vs. fat, E660
glucose homeostasis, newborn, E129
glutamine metabolism (sheep), E197
lipoproteins, very low density, secretion, E277
Fat
body, determination by underwater weighing and volume displacement, E94
exogenous, glucose homeostasis, newborn, E129
gastric emptying after nonliquid meals, E660
Fat cells
glucose transport, measurement with L-arabinose uptake, E112
glucose transport system, insulin and insulin mimickers, E484
glucose utilization, bovine hypothalamic extract and, E554
insulin-resistant, fatty acid synthesis, E182
metabolism, spontaneously obese rat, E182
Fatty acids
binding protein, liver, E542
competitors, liver, E542
esterification, monoglyceride effects, E236
esterification, sugar effects, E236
free, metabolism, chronic exercise, E221
pancreatic islets (ovine), E162
polyunsaturated, lipid transport and, E54
renin inhibition, E593
synthesis, insulin-resistant adipocytes, E182
Feeding
appetite, intestinal bypass surgery, E389
circadian rhythm, postnatal development, E500
dietary restriction, fetal developmental effects (pig), E190
glucagon suppression after vagotomy, E314
nonliquid meals, gastric emptying, glucose vs. fat, E660
nutrition, growth hormone and, E611
nutrition, somatic growth and, E611
Feeding behavior
2-deoxy-D-glucose, responses to, E20
glucoprivic, E617
insulin, responses to, E20
Feeding, sham
biliary secretion, E417
jejunal transport, E417
pancreatic secretion, E417
Female sex hormones: *see* Sex hormones
Femur
bone red cell space, hypocalcemia, E5
Fetal-maternal transfer: *see* Placenta
Fetus: *see also* Placenta
development, dietary restriction and ovarian steroidal effects (pig), E190
glucose production, hepatic, midterm, E560
glucose uptake autoregulation, hepatic, midterm, E560
protein balance, heart, regulation, E306
Fibrinogen
plasma, half-life, measurement, E504
protein synthesis, gastrointestinal, E648
Fluid
cerebrospinal, vasopressin, radioimmunoassay, E463
plasma/cerebrospinal barrier, permeability, E327
transport, gallbladder mucosa, cholelithiasis effects, E575
Fluoride
balance, magnesium effects, E343
metabolism, magnesium effects, E343
Food deprivation: *see* Fasting
Food intake: *see* Feeding
Force transducer: *see* Transducers
Freeze-blown technique
brain removal, E365

Gallbladder
fluid transport, mucosal, cholelithiasis, E575
motility: *see* Motility
vasoactive intestinal polypeptide, smooth muscle response, E44
Gastric: *see also* Stomach
Gastric acid: *see also* Gastric mucosa; Gastric secretion
Gastric antrum: *see* Antrum
Gastric emptying
cholecystokinin inhibition, E375
fractional rates, E660
glucose and fat, relative rates, E660
Gastric juice
sham feeding and, E417
Gastric metabolism: *see* Stomach
Gastric motility: *see* Motility
Gastric mucosa
acetylsalicylic acid hydrolase, E606
acid secretion and motility, simultaneous monitoring (kitten, ferret), E319
electrophysiology and secretion, inhibitors and weak bases (frog), E120
injury, E606
muscularis externa, acid secretion and motility (kitten, ferret), E319
sodium ion transport (mammalian), E228
Gastric secretion: *see also* Gastric acid
bicarbonate, E535
inhibition, oxygen consumption during, E445
inhibitors and weak bases (frog), E120
intestinal phase, stimuli, E64
Gastrin
esophageal sphincter regulation, E157
gastric secretion stimulation, intestinal phase, E64
pyloropancreatic reflex and, E468
Gastrointestinal hormones
duodenal muscle layers (opossum, cat), E60
Gastrointestinal tract
malignancies, protein synthesis and, E648
physiology, electromyogram, E641
Genetic obesity: *see* Obesity
Globulins
corticosteroid-binding, in pregnancy (monkey), E489
Glucagon
extrapancreatic, glucose turnover, E213
pancreatic, feeding suppression after vagotomy, E314
Glucagonemia
portacaval diversion, adipose tissue, E579
Glucogenicity
glutamine (sheep), E197
Gluconeogenesis
glucose homeostasis, newborn, E129
Glucoprivation
feeding behavioral response, E20, E617
Glucose
absorption, intestinal, E629
adrenal medullary (swine), E137
brain removal technique, E365
clearance, extrapancreatic glucagon effects, E213
clearance, nonsteady state, tracer methods, E84
countertransport, adipocytes, E112
enzyme regulation, diabetes, E13
enzyme regulation, hepatic, E13
gastric emptying, after nonliquid meals, E660
homeostasis, exogenous fat and gluconeogenic substrate effects, newborn, E129
insulin secretion and acid-base alterations, E426
isotopically labeled, nonsteady state measurements, E84
pancreatic islets (ovine), E162
transport, adipocytes, measurement with L-arabinose uptake, E112
transport, fat cells, insulin and insulin mimickers, E484
turnover, extrapancreatic glucagon control, E213
turnover, nonsteady state measurement, tracer studies, E84
uptake, autoregulation, midterm fetal liver, E560
Glucose analogues
fetomaternal transfer, placental (sheep), E32
Glucose carrier
artificial, renal cortex, model, E1
sodium ion-dependent, renal cortex, E1
sonicated liposomes, renal cortex, E1
Glucose metabolism
blood, portacaval diversion and, E579
insulin binding, soleus muscle, E348
paraquat perfusion, lung, E653
pentose pathway, E97
Glucose production
extrapancreatic glucagon effects, E213
midterm fetal liver, E560
nonsteady state, tracer methods, E84
Glucose utilization
bovine hypothalamic extract, effects, E554
extrapancreatic glucagon effects, E213
newborn, E129
L-Glucose
transport, adipocytes, E112
Glutamine
glucogenicity (sheep), E197
metabolism (sheep), E197
transport, interorgan (sheep), E197
unidirectional flux (sheep), E197
Glycine
^{15}N-labeled, protein synthesis, visceral, E648
Glycogen
feeding suppression, E314
glucose autoregulation, midterm fetal liver, E560
metabolism, hepatic, diabetes, E13

Glycogen phosphorylase
hepatic, diabetes, E13
Glycogen synthase
hepatic, diabetes, E13
Glycogen synthase phosphatase
hepatic, diabetes, E13
Gold thioglucose
insulin binding, soleus muscle, E348
Gonadal hormones
vitamin D metabolism (quail), E622
Gonadotropins
sexual maturation, male, in continuous light, E262
Growth
placental: *see* Placenta
somatic, exercise and, E611
Growth hormone
protein turnover, skeletal muscle, E38
serum, in exercise, E611
Growth hormone, human
hyperglycemic action, E521
insulin release, E527
synthetic C-terminal fragments, E527

Half-life
fibrinogen, plasma, measurement, E504
Heart
muscle: *see* Muscle, heart
organ culture, E306
protein balance, hydrocortisone and insulin effects, fetal, E306
Heartburn
esophageal sphincter muscle inhibition (opossum), E243
Heidenhain pouch
interdigestive motor activity, E333
Hemicorpus
perfusion, protein turnover, skeletal muscle, E38
Hemodynamics
hepatic, bile secretion and, E584
Histamine
acid secretion and motility, gastric mucosa (kitten, ferret), E319
gastric secretion, oxygen consumption and, E445
receptors: *see* Receptors
Histology
fundic, E286
pancreas, E286
Hormonal function
norepinephrine, E252
Hormones: *see* specific site or type
Hydrocortisone
protein balance, regulation, fetal heart, E306
Hydrogen dioxide
glucose transport, fat cells, E484
Hydrogen ions
secretion, gastric, E573
secretion, inhibitors and weak bases, stomach (frog), E120
Hydrostatic techniques
body fat determinations, E94
5-Hydroxytryptamine
vagal inhibitory pathway, lower esophageal sphincter (opossum), E273
25-Hydroxyvitamin D_3
metabolism (quail), E622
Hyodeoxycholic acid
biliary lipid secretion, E637
Hypercalciuria
absorptive, E294
lithium-induced, E294
parathyroid hormone-dependent, E294
Hyperglycemic action
human growth hormone synthetic C-terminal fragments, E521
Hyperinsulinemia
genetic obesity, development, E568
human growth hormone synthetic C-terminal fragments, E521
Hypertension
renal, adrenal glands and, E267
renin-angiotensin, E25, E267
sensitizing factors, E25
vasoactive factor, new, E25
Hyperthyroidism
insulin secretion, adrenergic modulation, E106
Hypervitaminosis A
triglycerides, fatty liver, synthesis and release, E511
Hypocalcemia
red cell space, bone, femur, E6
Hypoglycemia
glucoprivic feeding behavior, E617
Hypophysectomy
protein turnover, skeletal muscle, E38
Hypothalamic effects
lipogenesis, E554
Hypothalamic extract
bovine, glucose utilization, adipocytes, E554
Hypothalamic-insular axis
glucose utilization, adipocytes, E554
Hypothalamus
lesions, oxygen consumption and locomotor activity, neonatal, measurement, E532
ventromedial, obesity, intestinal bypass surgery, E389
Hypothyroidism
insulin secretion, adrenergic modulation, E106
Hypoxia, arterial
oxygen consumption, intestinal, E248
rubidium-86 extraction, E248
Hypozincemia
bacterial infection, E399
metallothioneins, hepatic, E399

Ileum
contractile activity, prostagland E effects, E209
sodium-potassium-ATPase, significance, E629
secretion, ouabain inhibition, E629
transport characteristics, newborn, E257
Imidazole
electrophysiology and secretion, stomach (frog), E120
Immunofluorescent antibody technique
renin localization, submaxillary gland and kidney, E480
Indomethacin
zinc absorption, E99
Insulin
adipocyte resistance, fatty acid synthesis, E182
binding, soleus muscle, lean and obese mice, E348
exercise and, E611
extrapancreatic glucagon and glucose turnover, E213
feeding behavior, glucoprivic, E617
feeding behavioral response, E20
glucose autoregulation, midterm fetal liver, E560
glucose transport, fat cells, E112, E484
glucose turnover, nonsteady state measurements, E84
growth hormone and, E611
mimickers, glucose transport, fat cells, E484
protein balance, regulation, fetal heart, E306
resistance, human growth synthetic C-terminal fragments, E521
resistance, soleus muscle, lean and obese mice, E348
secretion, acid-base alterations, E426
secretion, adrenergic modulation dependent on thyroid states, E106
sugar transport, ATP effects, soleus muscle, E407
sugar transport kinetics, heart muscle, E70
triglyceride secretion, exercise, E221
Insulin release
C-terminal fragments of human growth hormone, E527
fatty acid effects, pancreatic islets (ovine), E162
isolated islets, E527
potentiators, islets, E527
Insulinemia
portacaval diversion, adipose tissue, E579
Intestinal absorption
glucose, E629
in vivo, E54
sodium, E629
water, E629
zinc, prostaglandin E_2 role, E99
Intestinal bypass surgery
obese and lean mice, E389
Intestinal motility: *see* Motility
Intestinal phase
gastric secretion, stimuli, E64
Intestinal rings
everted, fatty acid esterification, E236
Intestinal secretion
ouabain inhibition, E629
sodium-potassium-ATPase, significance, E629
Intestinal transport
phosphate, vitamin D effects (chick), E379
sham feeding and, E417
Intestines
blood flow: *see* Blood flow
lipoproteins, very low density, secretion, E277
oxygen consumption, hypoxia, E248
perfusion, sham feeding effects, E417
protein synthesis, E648
rubidium-86 extraction, hypoxia, E248
Intestines, small
circulation, histamine receptors and, E370
disaccharidase rhythm, development, postnatal, E500
transport characteristics, ileal, newborn, E257
Intralipid
triglyceride secretion, exercise, E221
Intrinsic nerves
electromyogram, colon, E641
Iodide
transport, thyroidal, organic binding blocked (chicken), E177
Iodine
dietary, accumulation, thyroid (chicken), E168
dietary, transport, thyroidal, organic

binding blocked (chicken), E177
kinetics, thyroidal (chicken), E168, E177
Ions
transport, ileal, newborn, E257

Jejunal transport
sham feeding and, E417
Jejunoileal bypass
obese and lean mice, E389
Jejunum
fatty acid esterification, E236

Ketoacids
amino acid oxidation, carnitine effects, liver and skeletal muscle, E494
Ketogenesis
fatty liver, in hypervitaminosis A, E511
glucose homeostasis, newborn, E129
Kidney
aldosterone metabolism, E472
glutamine metabolism (sheep), E197
hypertension: *see* Hypertension
metallothioneins, E282
renin: *see* Renin
urate, in muscular dystrophy, E421
zinc redistribution, E282
Kidney cortex
glucose carrier, sodium ion-dependent, E1
Komarov esophagostomy: *see* Esophagostomy

Lactase
circadian rhythm, postnatal development, small intestine, E500
metabolism, paraquat-perfused lung, E653
Lactation
polyamine blood levels, E451
Langerhans' islets
fatty acids, effects (ovine), E162
insulin: *see* Insulin
trophic actions of pentagastrin, cholecystokinin, and secretin, E286
Lead
excretion, biliary, metallothionein effects, E47
Lecithin
secretion, bile acid structure and, E637
Leucine
oxidation, carnitine effects, liver and skeletal muscle, E494
Leukocytes
polyamines, pregnancy and lactation, E451
Ligand
zinc binding, E99
Light
constant, circadian rhythm, adrenocortical, E515
continuous, sexual maturation, male, E262
Lipids
absorption, lymphatic, E54
hypervitaminosis A, liver, E511
metabolism, adipose tissue, portacaval diversion, E579
metabolism, paraquat-perfused lung, E653
plasma, hypervitaminosis A, E511
secretion, biliary, bile acids and, E637
transport, polyunsaturated fatty acids and, E54
Lipogenesis
adipose tissue, portacaval diversion, E579
genetic obesity, development, E568
hypothalamic effects, E554
Lipolysis
adipose tissue, portacaval diversion, E579
Lipoproteins
very low density, intestinal secretion, E277
Liposomes
sonicated, reconstituted from glucose carrier, renal cortex, E1
Lithium
hypercalciuria, E294
Liver
amino acid oxidation, carnitine effects, E494
bile secretion, hemodynamic effects, E584
enzymes, glucose regulation, E13
fatty, hypervitaminosis, A, E511
fatty, triglycerides, synthesis and release, E511
genetic obesity, development, E568
glucose production, midterm fetus, E560
glucose uptake, autoregulation, midterm fetus, E560
glutamine metabolism (sheep), E197
glycogen metabolism, diabetes, E13
metallothioneins, hypozincemia associated with bacterial infection, E399
metals, excretion, metallothionein effects, E47
metals, uptake, metallothionein effects, E47
mitochondria: *see* Mitochondria
palmitate, labeled, uptake, role of intracellular binding sites, E542
protein synthesis, E648
scanning, bile secretion, E584
urate, muscular dystrophy, E421
zinc redistribution, E282
Locomotor activity
monosodium glutamate-induced obesity, neonatal, measurement, E532
Lung
paraquat perfusion, glucose metabolism, E653
Lymph
triglycerides, E277
Lymphatic absorption
vitamin K_1, E54
Lysosomal enzymes
fetal heart, E306

Magnesium
metabolism, fluoride and, E343
Magnesium-ATPase
hemodynamic effects, liver, E584
Malignancies
protein synthesis, visceral, E648
Maltase
circadian rhythm, postnatal development, small intestine, E500
Manganese
excretion, biliary, metallothionein effects, E47
Mannitol
clearance, biliary, induced choleresis, E146
Manometry
rapid pull-through, esophageal, E157
Maturation
sexual, male, in continuous light, E262
Meals: *see* Feeding
Medullary bone: *see* Bone
Melanocyte-stimulating hormones
permeability, plasma/cerebrospinal fluid barrier, E327
Melanotropic peptides: *see* Peptides
Membrane transport
energetics, gastric, E445
Mepyramine
mesenteric circulation, E330
Mercury
excretion, biliary, metallothionein effects, E47
Mesenteric blood flow: *see* Blood flow; Circulation
Mesentery
oxygen consumption and rubidium-86 extraction, arterial hypoxia, E248
Metabolism: *see also* specific subject and site
fat cell, spontaneously obese rat, E182
postmorten, brain removal technique, E365
Metallothionein
biological function, E282
hypozincemia associated with bacterial infection, liver, E399
induction by stresses, E282
metals, biliary excretion, E47
Metals
excretion, biliary, E47
Methylglucose
efflux, fat cells, E484
3-Methylglucose
fetomaternal transfer, placental (sheep), E32
α-Methylglucoside
fetomaternal transfer, placental (sheep), E32
α-Methyltyrosine
adrenal medullary function, development (swine), E137
Metiamide
mesenteric circulation, E370
Microelectrodes
potassium ion-specific, salivary gland potassium transport in vivo, E79
Microscopy
in vivo, histamine receptors, mesenteric, E370
Microspheres: *see* specific subject or site
Mitochondria, liver
amino acid oxidation, carnitine effects, E494
Models: *see also* specific subject and site
artificial, glucose carrier, renal cortex, E1
compartment, glucose turnover, nonsteady state, E84
dispersion, glucose turnover, nonsteady state, E84
gastric mucosa, acid secretion and motility, simultaneous monitoring (kitten, ferret), E319
Monoglyceride pathway
fatty acid esterification, E236
Monosodium glutamate
obesity, neonatal oxygen consumption and locomotor activity, measurement, E532

Motility
cholecystokinin effects, gastric, E375
gastric mucosa (kitten, ferret), E319
gastrointestinal hormone, duodenal (opossum, cat), E60
prostaglandin E, ileal, E209
prostaglandin E, intestinal, E204
vasoactive intestinal polypeptide, gallbladder, E44
Motor activity
interdigestive, Heidenhain pouch, E333
Mucosa: *see* site
Muscle
contractions, interdigestive, Heidenhain pouch, E333
female sex hormones, esophageal sphincter (opossum), E243
gastrointestinal hormones, duodenal (opossum, cat), E60
glutamine metabolism (sheep), E197
Muscle, heart
sugar transport kinetics, insulin effects, E70
Muscle, skeletal
amino acid oxidation, carnitine effects, E494
insulin binding, soleus muscle, E348
protein: *see* Protein
Muscle, smooth
contractile activity, prostaglandin E, E209
contractility, gallbladder, E44
electromyogram, colon, intrinsic nerves, E641
5-hydroxytryptamine, lower esophageal sphincter (opossum), E273
motility: *see* Motility
pressure response to pentagastrin, esophageal sphincter (opossum), E301
spike bursts, oviduct, E430, E439
sugar transport, insulin-stimulated, ATP effect, soleus muscle, E407
vagal inhibitory pathway, lower esophageal sphincter (opossum), E273
vasoactive intestinal polypeptide, gallbladder, E44
Muscular dystrophy
homozygous and heterozygous mice, E421
uric acid metabolism, E421

Neurons
inhibitory, lower esophageal sphincter (opossum), E273
Neurotransmitters
norepinephrine, E252
Newborn
adrenal medullary function (swine), E137
circadian rhythm, sucklings, E500
disaccharidase circadian rhythm, small intestine, E500
glucose homeostasis, E129
obesity, genetic, development, E568
obesity, monosodium glutamate-induced, oxygen consumption and locomotor activity, measurement, E532
Nitrite
inhibition, electrophysiology and secretion, stomach (frog), E120
Nitrogen-15
fibrinogen half-life, measurements, E504
Nonadrenergic neurons
lower esophageal sphincter (opossum), E273
Noncholinergic neurons
lower esophageal sphincter (opossum), E273
Norepinephrine
hormone and neurotransmitter, E252
metabolic clearance rate, E252
plasma, half-time, E252
production rate, E252
secretion, adrenal (bovine), E600
5′-Nucleotidase
hemodynamic effects, liver, E584
Nutrition: *see* Feeding

Obesity
genetic, development, pre- and postweaning, E568
insulin binding, soleus muscle, E348
intestinal bypass surgery, E389
monosodium glutamate-induced, oxygen consumption and locomotor activity, neonatal, measurement
spontaneous, fat cell metabolism, E182
Octapeptide
cholecystokinin, gastric emptying inhibition, E375
Ontogenesis
adrenal medulla (swine), E137
Organ culture: *see* specific site or subject
Osmotic threshold
vasopressin release (sheep), E339
Ouabain
sodium ion transport, stomach (mammalian), E228
sodium-potassium-ATPase inhibition, intestinal, E629
Ovarian steroids
fetal development (pig), E190
spike bursts, oviduct, E439
Ovariectomy
vitamin D metabolism (quail), E622
Oviduct
spike bursts, estrogen and progesterone effects, E439
spike bursts, ovulation effects, E430
Ovulation
spike bursts, oviduct, E430
Ovum
spike bursts, E430, E439
Oxidation
amino acids, carnitine effects, liver and skeletal muscle, E494
Oxonic acid
uric acid metabolism, muscular dystrophy, E421
Oxygen consumption
gastric acid inhibition, E445
hemodynamic effects, liver, E584
intestinal, during hypoxia, E248
monosodium glutamate-induced obesity, neonatal, measurement, E532

Palmitate
incorporation, fatty liver, hypervitaminosis A, E511
uptake, liver, intracellular binding sites, E542
Palmitoyl-CoA synthetase
fatty liver, hypervitaminosis A, E511
Pancreas
bicarbonate secretion, E286
cholecystokinin, chronic, E286
distention, pyloropancreatic reflex, E468
enzyme secretion, E286
exocrine secretion, pyloropancreatic reflex, E468
fundic histology, E286
glucagon, feeding suppression, E314
hypertrophy, E286
insulin: *see* Insulin
pentagastrin, chronic, E286
perfusion, insulin secretion and acid-base alterations, E426
secretin, chronic, E286
secretion, sham feeding and, E417
Pancreatectomy
glucose turnover, extrapancreatic glucagon and, E213
Pancreatic islets: *see* Langerhans' islets
Paraquat
perfusion, lung, glucose metabolism, E653
Parasympathetic stimulation
potassium ion transport, salivary gland, E79
Parathyroid hormone
hypercalciuria, E294
red cell space, bone, hypocalcemia, E6
Parathyroidectomy
hypercalciuria, lithium-induced, E294
Pentagastrin
acid secretion and motility, gastric mucosa (kitten, ferret), E319
pressure response, lower esophageal sphincter (opossum), E301
trophic action, pancreas, E286
Pentobarbitone
vasopressin and, plasma, E463
Pentose pathway
glucose metabolism, E97
Peptides
gastric secretion stimulation, intestinal phase, E64
melanotropic, plasma/cerebrospinal fluid barrier permeability, E327
synthetic, hyperglycemic action, E521
Peptone
instillation, esophageal sphincter regulation, E157
Perfusion
heart, sugar transport kinetics, insulin effects, E70
hemicorpus, protein turnover, skeletal muscle, E38
intestinal, sham feeding effects, E417
kidney, aldosterone metabolism, E472
lung, paraquat, glucose metabolism, E653
pancreas, insulin secretion and acid-base alterations, E426
Peristalsis
esophageal, vagal innervation (opossum), E359
Permeability
plasma/cerebrospinal fluid barrier, melanotropic peptides and, E327
pH
changes, insulin secretion, E426
Phenylethanolamine *N*-methyltransferase
dopamine β-hydroxylase secretion, adrenal (bovine), E600
epinephrine secretion, adrenal (bovine), E600
Phosphate
absorption, intestinal, vitamin D and (chick), E379
transport, intestinal, vitamin D-dependent (chick), E379

Phosphatidic acid pathway
fatty acid esterification, E236
Phospholipids
secretion, biliary, bile acid structure and, E637
Photoperiod
constant, sexual maturation, male, E262
Placenta: *see also* Pregnancy; Fetus
glucose analogues, fetomaternal transfer (sheep), E32
growth, dietary restriction and ovarian steroidal effects (pig), E190
Plasma
adrenal medullary (swine), E137
constituents: *see* specific substance
Plasma/cerebrospinal fluid barrier
permeability, melanotropic peptides and, E327
Polyamines
blood levels, pregnancy and lactation, E451
Polypeptide, vasoactive intestinal: *see* Vasoactive intestinal polypeptide
Portacaval diversion: *see* Shunts
Postnatal infants: *see* Newborn
Potassium chloride
intestinal secretion and, E629
Potassium ions
efflux, parasympathetic-induced, salivary gland, E79
transport, salivary gland, in vivo, E79
Potentials
action, spike bursts, oviduct, E430, E439
gastric, inhibitors and weak bases (frog), E120
Pouch: *see* Antral pouch; Heidenhain pouch
Pregnancy: *see also* Fetus; Placenta
dietary restriction and ovarian steroids, effects (pig), E190
lower esophageal sphincter muscle inhibition (opossum), E243
polyamine, blood levels, E451
proteins, plasma, steroid-binding (monkey), E489
Pressure
gastric antrum regulation, esophageal sphincter, E157
pentagastrin effects, esophageal sphincter (opossum), E301
Progesterone
exogenous, fetal developmental effects (pig), E190
lower esophageal sphincter muscle inhibition (opossum), E243
spike bursts, oviduct, E439
Prolactin
sexual maturation, male, in continuous light, E262
Prostaglandin E
endogenous, contractile activity, ileal smooth muscle, E209
endogenous, intestinal motility, E204
Prostaglandin E_2
gastric secretion inhibition, oxygen consumption during, E445
zinc absorption, E99
Prostaglandins
intestinal, E204
red cell space, hypocalcemic bone, E6
synthesis, ileal, E209
Protein
balance, hydrocortisone and insulin effects, fetal heart, E306
degradation, skeletal muscle, E38
fatty acid-binding, liver, E542
steroid-binding, plasma, during pregnancy (monkey), E489
zinc-binding, hepatic, E399, E542
Protein kinase
hepatic, in diabetes, E13
Protein synthesis
fetal heart, E306
fibrinogen half-life, E504
gastrointestinal malignancies, E648
human visceral, E648
skeletal muscle, E38
Protein turnover
growth hormone effects, skeletal muscle, E38
hypophysectomy effects, skeletal muscle, E38
Pyloropancreatic reflex
pancreatic exocrine secretion, E468
Pyloroplasty
gastric emptying, E375
Pylorus
cholecystokinin inhibition of gastric emptying, E375
Pyruvate
metabolism, paraquat-perfused lung, E653

Radioimmunoassay
vasopressin, cerebrospinal fluid and plasma, E463
Radionuclide studies: *see* specific subject and site
Receptors
acyl, fatty acid esterification, intestinal, E236
adrenergic, blockers, insulin secretion modulation, E106
H_2, antagonists, bicarbonate secretion, gastric, E535
histamine, antagonists, mesenteric circulation, E370
histamine, mesenteric circulation, E370
insulin, soleus muscle, E348
Red cells: *see* Erythrocytes
Reflexes
pyloropancreatic, E468
Renin
immunofluorescent localization, kidney and submaxillary gland, E480
inhibition by fatty acids, E593
Renin-angiotensin system
renal hypertension, E267
vasoactive factor, hypertension, E25
Reserpine
adrenal medullary function, development (swine), E137
Resistance, gastric
inhibitors and weak bases (frog), E120
Rhythm
circadian, adrenocortical activity differences, mutual influence, E515
circadian, disaccharidase activity, postnatal, small intestine, E500
free-running, adrenocortical activity, E515
Ribonucleic acid
protein turnover, skeletal muscle, E38
uric acid metabolism, muscular dystrophy, E421
Rubidium-86
extraction, arterial hypoxia, E248

Salivary gland
potassium ion transport in vivo, E79
Scanning
liver, bile secretion, hemodynamic effects, E584
Secretin
erythritol clearance, biliary, E146
mannitol clearance, biliary, E146
trophic action, pancreas, E286
Secretion: *see* specific subject and site
Sensitizing factors
hypertension, E25
Sex hormones, female
lower esophageal sphincter muscular inhibition (opossum), E243
Sex steroids: *see also* Steroids
plasma, protein-binding, in pregnancy (monkey), E489
Sexual maturation: *see* Maturation
Sham feeding: *see* Feeding
Shunts
jejunoileal bypass, obese and lean mice E389
portacaval diversion, lipid metabolism, adipose tissue, E579
sodium ion conductance, stomach (mammalian), E228
Silver
excretion, biliary, metallothionein effects, E47
Skeletal muscle: *see* Muscle, skeletal
Smooth muscle: *see* Muscle, smooth
Sodium
absorption, intestinal, E629
Sodium ions
glucose carrier dependence, renal cortex, E1
transport, active-passive, stomach (mammalian), E228
hemodynamics, liver, E584
ouabain inhibition, intestinal, E629
Soleus muscle
insulin binding, E348
sugar transport, insulin-stimulated, ATP effect, E407
Somatostatin
glucagon and glucose turnover, extrapancreatic, E213
glucose utilization, adipocytes, E554
Spermadine
blood levels, pregnancy and lactation, E451
Sphincter, esophageal: *see* Esophageal sphincter
Spike bursts
oviduct, estrogen and progesterone effects, E439
oviduct, ovulation effects, E430
Starvation: *see* Fasting
Steroids
adrenal, renal hypertension, E267
ovarian, fetal developmental effects (pig), E190
ovarian, spike bursts, oviduct, E439
protein binding, plasma, in pregnancy (monkey), E489
sex: *see* Sex steroids; Sex hormones
Stomach: *see also* Gastric
bicarbonate secretion, E535
carbon dioxide tension, E535
electrophysiology, inhibitors and weak bases (frog), E120
Heidenhain pouch, interdigestive motor activity, E333
membrane transport, energetics, E445
metabolism, oxygen consumption and, E445

Stomach (*continued*)
motility: *see* Motility
proximal, cholecystokinin inhibition of gastric emptying, E375
secretion: *see* Gastric secretion
sodium ion transport (mammalian), E228
Stress
metallothionein induction, E282
Submaxillary gland
renin, immunofluorescent localization, E480
Submersion
underwater weighing, technique for determining body fat, E94
Substrates
gluconeogenic, glucose homeostasis, newborn, E129
Sucklings: *see* Newborn
Sugar
fatty acid esterification, E236
transport, insulin effects, heart muscle, E70
transport, insulin-stimulated, ATP effect, soleus muscle, E407
Synaptic transmission
lower esophageal sphincter (opossum), E273

Taurocholate
chloreses, E146
erythritol clearance, biliary, E146
hemodynamic effects on bile secretion, liver, E584
mannitol clearance, biliary, E146
Test meals: *see* Feeding
Thiocyanate
gastric acid inhibition, oxygen consumption and, E445
inhibition, electrophysiology and secretion, stomach (frog), E120
Thyroid glands
function (chicken), E168, E177
iodide transport, organic binding blocked (chicken), E177
iodine, dietary, accumulation (chicken), E168
iodine, dietary, transport, organic binding blocked (chicken), E177
radioiodine accumulation (chicken), E168
Thyroid states
insulin secretion, adrenergic modulation, E106
Tolbutamide
acid-base alterations, E426
insulin secretion, E426
Tracers: *see* specific site and subject
Transducers, force
interdigestive motor activity, Heidenhain pouch, E333
Transmission: *see* Neurotransmitters; Synaptic transmission
Triglycerides
feeding, glucose homeostasis, newborn, E129
lymph, intestinal secretion, E277
secretion, reduced, chronic exercise, E221
synthesis and release, fatty liver, E511
synthesis and release, hypervitaminosis A, E511
very low density lipoproteins, intestinal secretion, E277
Triton
fatty liver, hypervitaminosis A, E511
Triton method
triglyceride secretion, exercise, E221
Tumors
visceral, protein synthesis and, E648
Tyrosine
adrenal medullary function, development (swine), E137

Urate
muscular dystrophy, E421
Uric acid
metabolism, muscular dystrophy, homozygous and heterozygous mice, E421
Uricase
muscular dystrophy, E421
Urinary excretion: *see* specific substance
Urine/plasma
urate, muscular dystrophy, E421

Vagal inhibitory pathway
3-hydroxytryptamine participation, lower esophageal sphincter (opossum), E273
Vagal innervation
esophagus (opossum), E359
Vagal stimulation
esophageal function (opossum), E359
intestinal transport, E417
Vagotomy
gastric emptying, E375
glucagon suppression of feeding, E314
thoracic, esophageal function (opossum), E359
Vagus nerves
glucagon suppression of feeding, E314
pyloropancreatic reflex, E468
Vascularity
red cell space, hypocalcemic bone, E6
Vasoactive factor
new, in hypertension, E25
Vasoactive intestinal polypeptide
smooth muscle response, gallbladder, E44
Vasoconstriction
mesenteric, adrenergic mechanisms (baboon), E457
Vasodilation
mesenteric, adrenergic mechanisms (baboon), E457
Vasopressin
plasma, radioimmunoassay, E463
release, osmotic threshold (sheep), E339
Viscera
portal-drained, glutamine (sheep), E197
Vitamin A
fatty liver and, E511
Vitamin D
metabolism, dietary calcium effects (quail), E622
metabolism, gonadal hormone effects (quail), E622
phosphate transport, intestinal (chick), E379
Vitamin K_1
absorption, luminal constituents, E54
absorption, thoracic duct lymph, E54
transport, into bile, E54
Vitamin K_3
glucose transport, fat cells, E484
Vitamins
fat-soluble, lymphatic absorption, E54
Volume
water displacement, body fat determination, E94

Water: *see also* Submersion
absorption, intestinal, E629
intake: *see also* Drinking; Thirst
intake, intestinal bypass surgery, E389
Weak bases
electrophysiology and secretion, stomach (frog), E120
Weaning
circadian rhythm, development, E500
genetic obesity, development, E568
Weight, body
intestinal bypass surgery, E389
regulation, hypothalamic extract and, E554
White blood cells: *see* Leukocytes

Xylose
fetomaternal transfer, placental (sheep), E32
D-Xylose
uptake, insulin-stimulated, soleus muscle, E407

Zinc
absorption, prostagland E_2 and, E99
bacterial infection and, liver, E399
binding, ligand, E99
excretion, biliary, metallothionein effects, E47
protein: *see* Protein
redistribution, kidney, E282
redistribution, liver, E282
Zinc-65
metallothioneins, in bacterial infection, liver, E399

Author Index to Volume 3

Adam, P. A. J., E560
Adham, N. F., E99
Adibi, S. A., E494
Agus, Z. S., E294
Amatruda, J. M., E484
Anderson, L. L., E190
Anuras, S., E60, E641
Arias, I. M., E542
Arthur, C., E641
Ayres, J. J., E94

Baksi, S. N., E622
Balch, O. K., E20
Barnhart, J. L., E146
Bassett, D. J. P., E653
Bergman, E. N., E197
Bledsoe, S. W., E79
Blum, A. L., E157
Borer, K. T., E584
Bornstein, J., E521, E527
Boyd, R. D. H., E32
Boyer, J. L., E584
Burns, A., E97

Cameron, D. P., E532
Canterbury, W. J., Jr., E399
Cardona, R., E25
Charney, A. N., E629
Cheung, J. Y., E70
Cheung, L. Y., E445
Christensen, J., E641
Christophe, J., E579
Cohen, S., E243, E359
Combes, B., E146
Conover, C., E70
Conway, E. S., E660
Cooke, A. R., E60
Cooke, H. J., E257
Cooper, K., E417
Corvol, P., E472
Crane, R. K., E1
Cryer, P. E., E252
Cushman, S. W., E112
Czech, M. P., E182

Daly, D. S., E542
Dawson, D. C., E257
Deagen, J. T., E282
Debas, H. T., E375, E468
De Wied, D., E463
Dinterman, R. E., E399
Dju, M. Y., E421
Dogterom, J., E463
Donowitz, M., E629
Duffy, K. R., E301
Dunseth, D. W., E190

Eaton, R. P., E221

Fairclough, P., E1
Ferré, P., E129
Fisher, A. B., E653
Fisher, D. A., E339
Fisher, R. S., E243
Flaim, K. E., E38
Flemström, G., E535
Foley, J. E., E112
Fordtran, J. S., E417
Forte, J. G., E228
Freychet, P., E348

Gagliardino, J. J., E426
Garner, A., E535
Girard, J. R., E129
Goldberg, M., E294
Goldfarb, S., E294
Goodspeed, M. P., E262
Goresky, C. A., E542
Gould, M. K., E407
Goyal, R. K., E273
Grabie, M., E294
Grabowski, C. J., E243
Griffin, E. E., E306
Grimes, L. J., E554
Grossman, M. I., E286
Guth, P. H., E370

Hargrove, W. C., III, E648
Haworth, C., E32
Hayafuji, C., E515
Haymond, M. W., E252
Hebbelinck, M., E579
Heitmann, R. N., E197
Henry, D. P., E600
Hernandez, R. E., E426
Hodgson, B. J., E430, E439
Hoffman, L. H., E480
Hoffman, N. E., E637
Hollander, D., E54
Hollinger, A. P., E157
Holm, R. A., E489
Huang, C. T., E25

Inoue, K., E515
Isshiki, S., E333
Itoh, Z., E333

Jackson, A. S., E94
Jacobs, T. P., E600
Jeanrenaud, B., E348, E568
Jefferson, L. S., E38
Johnson, D. G., E600
Jordan, H. N., E162

Katz, J., E97
Kaye, M., E6
Keomäki, M., E560
Kelch, R. P., E611
Kenny, A. D., E622
Kerr, J. C., E457
Klaassen, C. D., E47
Kobayashi, K., E515
Koelz, H. R., E157
Konturek, S. J., E64
Koopmans, H. S., E389
Kotchen, T. A., E593
Krakoff, L. R., E267
Kramer, L., E343
Kravitz, J. J., E359
Kutner, M. H., E327
Kwiecień, N., E64

Largiadèr, F., E157
Larson, K., E445
Lau, K., E294
Lee, S. P., E575
Le Marchand-Brustel, Y., E348, E568
Leskiw, M. J., E504
Li, J. B., E38
Lickley, L., E213

Lien, J., E6
Livingston, J. N., E484
Lockwood, D. H., E484
Long, W. B., E236
Lowry, S. F., E445
Lundgren, D. W., E451

Machen, T. E., E228
Malathi, P., E1
Mapes, C. A., E399
Marliss, E. B., E129
Martin, J. M., E554
Martin, J. R., E314
Matzuda, H., E500
Menard, J., E472
Menzie, J. W., E480
Michelakis, A. M., E25, E480
Miller, T. B., Jr., E13
Mishkin, S., E542
Mok, C., E554
Moody, F. G., E445
Morgan, H. E., E70
Moses, A. M., E339
Mullen, J. L., E648
Munson, P. J., E339

Nakamura, Y., E515
Nakane, H., E472
Nakane, Y., E472
Neville, M., E617
Newcomer, W. S., E168, E177
Ng, F. M., E521
Norwich, K. H., E84
Novin, D., E314

Oh, S. H., E282
Oka, T., E451
Okajima, F., E106
Oram-Smith, J. C., E648
Osis, D., E343

Pape, G., E94
Paul, H. S., E494
Pector, J.-C., E579
Pegorier, J. P., E129
Peterlik, M., E379
Petersen, H., E286
Phillips, R. W., E162
Piacsek, B. E., E262
Pirkle, J. A., E120
Pollock, M. L., E94
Poon, T. K.-Y., E532
Poulsen, J. H., E79
Preiser, H., E1
Putney, J. D., E660

Radecki, T., E64
Radziuk, J., E84
Rahiala, E.-L., E560
Rattan, S., E273
Reach, G., E472
Read, N. W., E417
Reaven, E. P., E277
Reaven, G. M., E277
Rebolledo, O. R., E426
Reddy, W. J., E97
Reed, J. S., E584
Regen, D. M., E70
Rehm, W. S., E120
Reichman, M., E389

Reynolds, D. G., E457
Ribeiro, A. B., E267
Richardson, D. K., E182
Rim, E., E54
Risser, T. R., E277
Ritter, R. C., E20, E617
Roberts, G. S., E243
Rodbard, D., E339
Roelke, M., E617
Rosato, E. F., E648
Ross, G., E204, E213
Roth, S. H., E319
Rudman, D., E327
Ryan, J. P., E44, E301
Ryave, S., E44

Sackett, G. P., E489
Saito, M., E500
Salans, L. B., E112
Sanders, K. M., E204, E209
Sanders, S. S., E120
Saüberli, H., E157
Schiller, H. S., E489
Schofield, B., E319
Schwartz, A. L., E560
Sclafani, A., E389
Sewell, R. B., E637
Shah, S. D., E252
Shepherd, A. P., E248
Shiau, Y.-F., E236
Shoemaker, R. L., E120
Siewert, R., E157
Silen, W., E228
Silverberg, A. B., E252
Simonelli, C., E221
Singh, M., E511
Singh, V. N., E511
Smallwood, R. A., E637
Smith, E., E370
Snape, W. J., Jr., E359
Sobocinski, P. Z., E399
Solomon, T., E286
Song, M. K., E99
Spencer, H., E343
Spenney, J. G., E606
Stacey, T. E., E32
Stanton, H. C., E137
Statham, N. J., E262
Stein, T. P., E504, E648
Suda, M., E500
Swan, K. G., E457

Takahashi, K., E515
Takahashi, Y., E515
Takayanagi, R., E333
Takeuchi, S., E333
Talo, A., E430, E439
Talwalkar, R. T., E593
Tavoloni, N., E584
Trout, D. L., E660
Tyce, G. M., E365

Ui, M., E106

VanderWeele, D. A., E314
van Wimersma Greidanus, TJ. B., E463
Vasselli, J. R., E389
Verbeustel, S., E579
Vranic, M., E84, E213

Wallace, H. W., E504, E648
Ward, A., E94
Ward, R. H. T., E32
Wasserman, R. H., E379
Weedon, A. P., E32
Weerasinghe, C., E527
Weiss, J. B., E236
Weitzman, R. E., E339
Welch, W. J., E593
Weswig, P. H., E282
Whanger, P. D., E282
Whitfield, C. F., E70
Wiatrowski, E., E343
Wildenthal, K., E306
Williams, R. H., E600
Winand, J., E579
Wong, K.-L., E365
Woo, S. K., E137
Yamagishi, T., E375, E468
Yates, J. C., E319
Yu, K. T., E407
Yü, T.-F., E421
Zanetta, A. C., E426

Subject Index to Volume 4

Absorptiometry
  photon, postmenopausal women, E82
Acetoacetate
  ketone body turnover and net ketone production, hepatic, E238
  ketone utilization, fetal hepatocytes, E330
Acetoacetyl-CoA thiolase
  ketone utilization, fetal hepatocyte, E330
Acetylcholine
  cyclic adenosine monophosphate, pancreatic islets, E493
  insulin release, pancreatic islets, E493
  membrane potentials, pancreatic islets, E493
Acetylsalicylic acid
  cation transport, gastric mucosal cells, E16
Acinar cells: *see* Pancreatic acinar cells
Acrodermatitis enteropathica
  zinc-binding ligands in milk, E556
Actinomycin D
  enzyme induction, liver, E374
Adenosine monophosphate, cyclic
  acetylcholine-stimulated pancreatic islets, E493
  gonadotropin release, E586
  hydrochloric acid and, oxyntic cell, gastric mucosa (bullfrog), E140
  luteinizing hormone response, sex difference, E291
  peptide action, pancreatic acinar cells (amphibian), E112
  pituitary, response to gonadotropin-releasing hormone, sex difference, E37
  prostaglandins and, interaction, gastric mucosa, E546
Adenosine triphosphatase
  bicarbonate-stimulated, in bile salt-independent fraction of bile flow, E158
Adenosine triphosphate
  insulin binding to soleus muscle, E606
Adenylate cyclase
  prostaglandins and, interaction, gastric mucosa, E546
Adipocytes: *see* Fat cells
Adipose tissue
  brown: *see* Brown fat
  diet-induced obesity, E279
  erucic acid metabolism, E509
  white, phosphoenolpyruvate carboxykinase activity, E197
Adrenal cortex
  angiotensin metabolism with adrenal transplants (sheep), E525
  binding (sheep), E525
Adrenal glands
  chromogranin synthesis (bovine), E475
  dopamine β-hydroxylase synthesis (bovine), E475
Adrenal medulla
  protein synthesis (bovine), E475
Adrenal state
  glucocorticoid induction of liver enzymes, E374
Adrenal transplants
  angiotensin metabolism (sheep), E525
Adrenalectomy
  gluconeogenesis, hepatic, E354
  sucrase, jejunal, circadian rhythm, E437
Adrenergic receptors: *see* Receptors
Aging
  amino acid transport, diaphragm, E304
  glucocorticoid induction of liver enzymes, E374
  pituitary cyclic AMP response to gonadotropin-releasing hormone, E37
Alanine
  gluconeogenesis (ovine fetus and lamb), E448
Aldosterone secretion
  adrenocortical, angiotensin metabolism and (sheep), E525
  adrenocortical, with adrenal transplants (sheep), E525
Alpha-fetoprotein: *see* α-Fetoprotein
Amino acid transferase
  branched chain, keto acids and, isolated perfused kidney, E47
Amino acids
  absorption, in streptozotocin diabetes, E457
  release, keto acids and, kidney, E47
Amino acids, transport
  diaphragm, insulin resistance, newborn, E304
  growth hormone supply and, E316
  preincubation, E304
  system A, E304
  vitamin B_6 deficiency, E316
α-Aminoisobutyrate
  transport, diaphragm, newborn, E304
Ammonia
  activity, zinc deficiency, E203
  excretion, glutamine metabolism, renal, E261
  excretion, high protein diet, E261
  urinary, protein turnover measurement, end product, E165
  utilization, zinc deficiency, E203
Ammoniagenesis
  mitochondrial, high protein diet, E261
Amniotic fluid
  α-fetoprotein (ovine), E27
Amylase
  caerulein-secretin interaction, trophic effects, pancreas, E714
Amylase release
  pancreatic acinar cells (amphibian), E112
  pancreatic acini, E743
  secretagogue action, pancreatic acini, E517
Androgens
  pituitary cyclic AMP response to gonadotropin-releasing hormone, E37
Anaerobiosis
  insulin binding to soleus muscle, E606
Angiotensin
  adrenocortical metabolism with adrenal transplants (sheep), E525
  receptor: *see* Receptors
Angiotensin II
  esophageal smooth muscle (opossum), E738
Antibiotics
  prednisolone-induced intestinal lesions, E703
Antidiuretic hormone
  prostaglandin excretion, renal, E624
Anti-insulin serum
  gluconeogenesis and, E354
Antiperistalsis
  gastric and duodenal (chicken), E670
Antrum
  gastric, efferent vagal fibers, discharge, E366
  gastric, electrical and mechanical effects of cholecystokinin, E324
  gastrin release, inhibitor, E410
  gastrin release, organ culture study, E410
  smooth muscle response to bethanechol and progesterone, E422
Apparatus and techniques: *see* specific subject and site; *see also* Models
Arachidonic acid
  prostaglandin-adenylate cyclase-cyclic AMP interaction, gastric mucosa, E546
Arginine vasopressin: *see* Vasopressin
Arterial pressors: *see* Pressors
Arteries
  glucose and lactate, plasma concentrations (sheep), E487
asialo-PMSG: *see* Gonadotropin, pregnant mares serum
Aspartate
  ^{14}C-labeled, gluconeogenesis, insulin effects, E22
Aspirin: *see* Acetylsalicylic acid
ATPase: *see* Adenosine triphosphatase
Atropine
  acetylcholine-stimulated pancreatic islets, E493
  deoxyribonucleic acid synthesis, gastric mucosa, E565
  pancreatic polypeptide response to a meal, E443
Auerbach's plexus
  stimulation, polarity of effects on longitudinal muscle, E345
Autonomic nervous system
  ion transport, intestinal, E402

Balloon
  gastric, intestinal motility monitoring, E532
Beta cells: *see* Pancreatic β-cells
Bethanechol
  esophageal sphincter, lower, responses (baboon), E42
  gastrin release, in gastric fistula, E720
  mechanical responses after progesterone, antral and gastroduodenal smooth muscle, E422
  pancreatic polypeptide release, E443
Bicarbonate
  ^{14}C-labeled, incorporation into blood

Bicarbonate (*continued*)
glucose, insulin and fasting effects, E22
hydrogen ion removal, mechanisms, stomach and duodenum, E692
secretion, forestomach (llama), E1
transport, and bile salt-independent fraction of bile flow, E158
Bile
β-carotene absorption, intestinal, E686
diversion, chylomicron composition and, E183
Bile flow
bile salt-independent fraction, bicarbonate and, E158
Bile salt
biliary permselectivity and, E570
independent fraction of bile flow, bicarbonate and, E158
Biliary canalicular membrane
bioelectric constraints, E570
permselectivity, E570
Biliary clearance
bile salt-associated and bile salt-independent fractions, E570
carboxylinulin, E570
ferrocyanide-sucrose, E570
methoxyinulin, E570
probe analysis, permselectivity, E570
Biliary transport
electrolytes, E158
Bioassay
dose-response curves, sigmoidal, simultaneous analysis, E97
Blockade
H_1 and H_2 receptors, esophageal sphincter, lower (baboon), E42
Body
constituents: *see* specific constituent
neutron activation analysis, total, postmenopausal women, E82
Bombesin
action, pancreatic acinar cells (amphibian), E112
gastrin release, in gastric fistula, E720
Bone
mineral content, postmenopausal women, E82
peak mass, postmenopausal women, E82
Bowels: *see* Intestines
Brain
synaptosomal thyroid hormones, E638
Brown fat
phosphoenolpyruvate carboxykinase activity, glucocorticoid regulation,; E197
Brush border
folic acid transport, small intestine, E678

Caerulein
action, pancreatic acinar cells (amphibian), E112
myoelectrical activity, small bowel, E249
Caerulein-secretin interaction
pancreatic size and composition, E714
Calcium
dietary, cellular and paracellular transport, ileum, E726
estrogen effects on renal vitamin D hydroxylases and serum 1α,25-dihydroxyvitamin D_3 (chick), E138
plasma levels, paresis (cow), E634
secretagogue action, pancreatic acini, E517
total body, postmenopausal women, E82
Calcium, transport
cecal and colonic, in diabetes, E699
cellular and paracellular, ileum, E726
pancreatic acinar cells (amphibian), E112
Calcium-45
efflux, pancreatic islets, glucose inhibition (*ob*/*ob* mouse), E191
Capillary fluid: *see* Fluid
Capillary permeability: *see* Permeability
Carbachol
intestinal nucleotide cyclases and, E539
oxyntic cell cyclic AMP and hydrochloric acid, gastric mucosa (bullfrog), E140
Carbamylcholine
insulin release, pancreatic islets, E493
Carboxyinulin
biliary clearance rates, E570
Cardia: *see* Stomach
β-Carotene
absorption, intestinal, effects of bile, fatty acid, pH, and flow rate, E686
Carrier mechanism
folic acid, small intestine, E678
Catecholamines
demethylation, erythrocytes, E150
Cathepsin D
protein turnover, thyroxine effects, skeletal muscle, E231
Cations
transport, acetylsalicylic acid effects, gastric mucosal cells, E16
Cecum
calcium transport, in diabetes, E699
Cells: *see* specific site and type
Chloride
absorption, forestomach (llama), E1
fluxes, insulin release and, pancreatic islets, E501
fluxes, transmural, gastric mucosa, E7
uptake, pancreatic islets, obese-hyperglycemic mice, E501
Cholecystokinin
action, pancreatic acinar cells (amphibian), E112
amylase release, pancreatic acini, E743
electrical and mechanical effects, antral smooth muscle, E324
octapeptide, intragastric pressure and, E552
Choleresis
bile salt, permselectivity and, E570
Cholesterol ester
chylomicron composition, duodenal, E183
Cholinergic agents
action, pancreatic acinar cells (amphibian), E112
amylase release, pancreatic acini, E743
ion transport, intestinal, E402
Cholinergic control
pancreatic polypeptide release, E443
Cholinergic effects
pancreatic islets, E493
Chorionic gonadotropin, human: *see* Gonadotropin
Chromaffin vesicle
biosynthesis (bovine), E475
Chromatography, gas
erucic acid metabolism, E509
Chromogranins
synthesis, perfused adrenal glands (bovine), E475
Chylomicrons
erucic acid metabolism, E509
lipid composition, lymph, E183
secretion, duodenal, E183
Cimetidine
esophageal sphincter, lower, responses (baboon), E42
Circadian rhythm: *see* Rhythm
Colon
calcium transport, in diabetes, E699
deoxyribonucleic acid synthesis, E565
development, E207, E213
galactosyltransferase, fetal, neonatal, and adult, differentiation, E213
glycoprotein synthesis, E207, E213
Compartmental analysis: *see* Models, and the specific subject and site
Computer studies: *see* Models, and the specific subject and site
Conductance
total tissue, gastric mucosa, E7
Constant-infusion isotope dilution method
glucose-lactate interrelations (sheep), E487
Contraction: *see* Muscle
Corn oil
erucic acid metabolism and, E509
Corticosteroid-binding globulin
plasma concentrations during development, E451
Corticosterone
total and free, plasma concentrations during development, E451
Coupling
insulin receptor-glucose transport system, adipocytes, in streptozotocin diabetes, E175
solute, fluid transport, ileal, E429
Creatine kinase
plasma clearance, thyroid function and, E614
Cyclic AMP: *see* Adenosine monophosphate, cyclic
Cyclic GMP: *see* Guanosine monophosphate, cyclic; Guanosine 5′-phosphoric acid, cyclic
Cyclic nucleotides: *see* Nucleotides
Cytoprotection
prednisolone-induced intestinal lesions, E703

Data analysis: *see* Models, and the specific subject
Dehydroepiandrosterone
clearance, females (baboon), E74
dynamics, females (baboon), E74
estradiol and, in pregnancy (baboon), E78
production, females (baboon), E74
secretion rate, females (baboon), E74
transfer constant, females (baboon), E74
Dehydroepiandrosterone sulfate
clearance and production, females (baboon), E74
estradiol and, in pregnancy (baboon), E78
Demethylation
erythrocytes, hemoglobin and, E150
Denervation

vagal, fundic mucosa, DNA synthesis, E32
2-Deoxyglucose
gastrin release, in gastric fistula, E720
uptake, adipocytes, in streptozotocin diabetes, E175
Deoxyribonucleic acid
caerulein-secretin interaction, trophic effects, pancreatic, E714
ribonucleic acid and, hybridization, dose-response curves, E97
synthesis, gastric mucosa, after vagotomy and atropine, E565
synthesis, gastrin effects, mucosal, E32, E565
Dephosphorylation
pyridoxine hydrochloride, absorbed, jejunal, E272
Development: *see* Growth; Embryology; Fetus; Newborn
Dexamethasone
phosphoenolpyruvate carboxykinase activity, brown adipose tissue, E197
Diabetes
calcium-45 efflux, pancreatic islets (*ob/ob* mouse), E191
ketone body turnover, hepatic, E238
ketones, net production, hepatic, E238
Diabetes insipidus
prostaglandin excretion, renal, E624
Diabetes, streptozotocin
calcium transport, cecal and colonic, E699
diglycine absorption, E457
glucose metabolism, adipocytes, E175
insulin binding, adipocytes, E175
Diaphragm
amino acid transport, insulin resistance, newborn, E304
Diet: *see* Feeding, and the specific dietary constituent
Diglycine
absorption, in streptozotocin diabetes, E457
1,25-Dihydroxyvitamin D
plasma levels, parturient paresis (cow), E634
1α,25-Dihydroxyvitamin D_3
estrogen effects (chick), E338
16,16-Dimethyl prostaglandin E_2
interaction with adenylate cyclase-cyclic AMP system, gastric mucosa, E546
prednisolone-induced intestinal lesions, prevention, E703
2,4-Dinitrophenol
cation transport, gastric mucosal cells, E16
insulin binding to soleus muscle, E606
DNA: *see* Deoxyribonucleic acid
Dopa
demethylation, erythrocytes, E150
Dopamine β-hydroxylase
synthesis, perfused adrenal glands (bovine), E475
Dose-dependence
insulin, plasma disappearance, E577
Dose-response curves
bioassay, E97
curve fitting, E97
DNA-RNA hybridization, E97
radioligand assay, E97
sigmoidal, simultaneous analysis, E97
Duodenal acid
fluxes, hydrogen ions and, E692
Duodenum
antiperistalsis (chicken), E670
chylomicron composition during triglyceride and lecithin infusion, E183
hydrogen ion removal, different mechanisms, E692
motility: *see* Motility

Efferent fibers
vagal, discharge, gastric antrum, E366
EGTA
calcium-45 efflux, pancreatic islets (*ob/ob* mouse), E191
Electrical activity
intracellular, antral smooth muscle, E324
Electrolyte transport
biliary, E158
intestinal, cholinergic-adrenergic interactions, E402
Electromyography
efferent vagal fibers, discharge, gastric antrum, E366
Eledoisin
pancreatic acinar cells (amphibian), E112
Embryology
colon, E207
Enzymes: *see also* specific enzyme and site
urea cycle, zinc deficiency, E203
Epinephrine
and glucagon, sequential infusion, effect on glucose turnover, E287
gluconeogenesis, hepatic, E354
nucleotide cyclases, intestinal epithelium, subcellular distribution, E539
Epithelium: *see* site
Erucic acid
ingested, metabolism, E509
Erythrocytes
demethylation, hemoglobin and, E150
Escherichia coli
toxigenic, myoelectrical response, small intestine, E311
Eserine
insulin release, pancreatic islets, E493
Esophageal contractions
off-response (opossum), E392
on-response (opossum), E392
vagal stimulation, E63, E392
Esophageal sphincter, lower
angiotensin receptor (opossum), E738
histaminergic pharmacology (baboon), E42
Esophagus
angiotensin receptor (opossum), E738
peristalsis, vagal stimulation-induced (opossum), E392
potassium content, smooth muscle, regional differences (opossum), E709
vagal stimulation, E63, E392
Estradiol
dehydroepiandrosterone and its sulfate, in pregnancy (baboon), E78
metabolic clearance rate, pregnancy (baboon), E78
production, pregnancy (baboon), E78
secretion, pregnancy (baboon), E78
transfer constant, pregnancy (baboon), E78
Estrogen
1α,25-dihydroxyvitamin D_3, serum (chick), E338
osteoporosis, postmenopausal, E338
vitamin D hydroxylases, renal (chick), E338
Estrogen precursors
pregnancy (baboon), E78
Ethanol
ion transport, gastric mucosa, parallel pathways, E7
Exercise
glucose metabolism, splanchnic, E255
glycogen metabolism, muscle, E255
Exocrine pancreas: *see* Pancreas
Exocrine secretion
vasoactive intestinal polypeptide effects (pig), E387
Extracellular space
measurements, esophagus (opossum), E709

Fasting
bicarbonate incorporation into blood glucose, insulin effects, E22
glucose and glycogen metabolism, postexercise, E255
ketone body turnover, hepatic, E238
ketone utilization, fetal, E330
ketones, net production, hepatic, E238
lactate metabolism, lung, E619
pregnancy, fetal and newborn insulin secretory response (sheep), E467
protein synthesis, skeletal muscle and heart, E126
pyruvate incorporation into blood glucose, insulin effects, E22
Fat
brown: *see* Brown fat
dietary, lingual lipase activity and, E416
Fat cells
diet-induced increase, E279
glucose metabolism, streptozotocin diabetes, E175
glucose transport, hyperinsulinemia, E53
insulin binding, hyperinsulinemia, E53
insulin binding, streptozotocin diabetes, E175
insulin sensitivity, E53
metabolism, hyperinsulinemia, E53
Fatty acid
β-carotene, intestinal absorption, E686
composition, erucic acid and, E509
free, ketone body turnover and net ketone production, hepatic, E238
free, metabolism, erucic acid and, E509
hepatocytes, fetal, E330
metabolism, erucic acid metabolism and, E509
specificity, erucic acid metabolism and, E509
volatile, absorption, forestomach (llama), E1
Feeding: *see also* specific dietary constituent
adipocyte increase, diet-induced, E279
bicarbonate incorporation into blood glucose, insulin effects, E22
blood glucose level, prandial, E103
deoxyribonucleic synthesis and, fundic mucosa, E32
insulin release, prandial, two stages, E103
metabolic correlates, E119

Feeding (*continued*)
pancreatic polypeptide response to meal, E443
postprandial disruption of migrating complex, E666
pyruvate incorporation into blood glucose, insulin effects, E22
test meals, disruption of interdigestive motor complex, E666
test meals, migrating complex, E666
Feeding behavior
sucrase, jejunal, circadian rhythm, E437
Feeding patterns
transplanted β-cells, E119
vagotomy, truncular, E119
Ferrocyanide-sucrose
biliary clearance rates, E570
α-Fetoprotein
fetal-maternal distribution (ovine), E27
Fetus: *see also* Pregnancy
α-fetoprotein, fetal-maternal distribution (ovine), E27
fuels, ketone utilization, hepatocytes, E330
galactosyltransferase, colonic, E213
gluconeogenesis from alanine (ovine), E448
glycoprotein synthesis, colon, E207
insulin secretion (sheep), E467
ketone utilization, hepatocytes, E330
proteins, serum (ovine), E27
Filtration
water, gastric mucosa (frog), E361
Fistula, gastric
gastrin release, cholinergic stimulation and suppression, E720
Flow rate
perfusate, β-carotene intestinal absorption, E686
Fluid
amniotic, α-fetoprotein (ovine), E27
capillary exchange, ileal, E429
solute-coupled transport, ileal, E429
Folic acid
influx, small intestine, E678
transport, small intestine, E678
Follicle-stimulating hormone
gonadotropin release, E586
Forestomach: *see* Stomach
Fructosediphosphatase
hormonal regulation of gluconeogenesis, E295
Fructose-6-phosphate substrate cycling, hormonal regulation of gluconeogenesis, E295
Fuels, fetal
ketone utilization, hepatocytes, E330
Fundic mucosa
cell proliferation, E32
deoxyribonucleic acid synthesis, E32
gastrin, E32
vagal denervation, E32
Fundic vagotomy
gastrin release, E720

Galactosyltransferase
fetal, neonatal, and adult colon, differentiation, E213
Gas chromatography: *see* Chromatography
Gastric: *see also* Stomach
Gastric acid
fluxes, hydrogen ions and, E692
secretion, cholinergic stimulation and suppression, E720
secretion, in gastric fistula, E720
Gastric antrum: *see* Antrum
Gastric balloon
pressure, intestinal motility monitoring, E532
Gastric emptying
intragastric pressure effects, E552
Gastric fistula: *see* Fistula
Gastric motility: *see* Motility
Gastric mucosa: *see also* Fundic mucosa
applied pressures and net water flux (frog), E361
barrier, hydrogen ion removal, E692
cellular cation transport, acetylsalicylic acid effects, E16
conductance, total tissue, E7
deoxyribonucleic acid synthesis, gastrin and, E565
ion transport, ethanol effects, E7
ion transport, parallel pathways, E7
noncellular leak path, E7
oxyntic cell cyclic AMP formation and hydrochloric acid secretion, dissociation (bullfrog), E140
prostaglandins, interaction with adenylate cyclase-cyclic AMP system, E546
Gastric secretion
applied pressures and net water flux (frog), E361
intragastric pressure effects, E552
Gastric tissue
hormonal influences, E422
Gastrin
deoxyribonucleic acid synthesis after vagotomy and atropine, E565
deoxyribonucleic acid synthesis, fundic mucosa, E32
intragastric pressure and, E552
myoelectrical activity, small bowel, E249
postprandial disruption of migrating complex, E666
Gastrin release
antral, inhibitor, E410
antral, organ culture study, E410
gastric fistula, cholinergic stimulation and suppression, E720
Gastroduodenal junction
smooth muscle response to bethanechol and progesterone, E422
Gastrointestinal tract
gastrin release, in antral organ culture, E410
motility: *see* Motility
Globulins
corticosteroid-binding, plasma concentrations during development, E451
Glucagon
and epinephrine, sequential infusion, effect on glucose turnover, E287
extraction, hepatic, augmented secretion, E88
hormonal regulation, E295
metabolism, postexercise, E255
secretion, effects of secretin (pig), E381
secretion, vasoactive intestinal polypeptide and (pig), E387
substrate cycling, E295
Glucocorticoids
peptide-chain initiation, skeletal muscle and heart, E134
phosphoenolpyruvate carboxykinase activity, regulation, brown fat, E197
tryptophan-oxygenase induction, liver, E374
tyrosine aminotransferase induction, liver, E374
Gluconeogenesis
alanine in vivo (ovine fetus and lamb), E448
^{14}C-labeled aspartate, insulin effects, E22
^{14}C-labeled bicarbonate, insulin effects, E22
^{14}C-labeled pyruvates, insulin effects, E22
fructose-6-phosphate substrate cycling, E295
futile cycles, E295
glucose-lactate interrelations (sheep), E487
hepatic, glucose load and, E354
hormonal regulation, E22, E295
intermediates, hepatic profiles, E354
renal, high protein diet and, E261
Glucose
arterial plasma concentration (sheep), E487
bicarbonate incorporation, insulin effects, E22
blood level, prandial, E103
inhibition, calcium-45 efflux, pancreatic islets (*ob/ob* mouse), E191
lactate and, interrelations (sheep), E487
load, hepatic gluconeogenesis, E354
maternal infusion, insulin secretory responses, fetal and newborn (sheep), E467
metabolism, adipocytes, streptozotocin diabetes, E175
metabolism, splanchnic, postexercise, E255
output, hepatic, E88
oxidation, adipocytes, streptozotocin diabetes, E175
oxidation, cardiac myocytes, amino acid stimulation, E461
pyruvate incorporation, insulin effects, E22
transport, adipocytes, in hyperinsulinemia, E53
tritiated, hormonal regulation of gluconeogenesis, E295
tritiated, substrate cycling, E295
turnover, glucagon and epinephrine infusion, E287
D-Glucose
chloride uptake and, pancreatic islets, E501
Glutaminase
glutamine metabolism, renal, E261
Glutamine
metabolism, renal, high protein diet, E261
Glycine
^{15}N-labeled, protein turnover, measurement, E165
Glycogen
formation, liver, E354
metabolism, muscle, postexercise, E255
Glycogen synthetase
liver, E354
Glycolysis
lung, perfused, E619

Glycoprotein
synthesis, developing colon, E213
Gonadotropin
human chorionic, action, Leydig and granulosa cells, E218
pituitary, release, stimulated by luteinizing hormone-releasing hormone, E586
pregnant mares serum, action, Leydig and granulosa cells, E218
Gonadotropin-releasing hormone
^{125}I-labeled, membrane binding, nonpituitary tissues, E227
mechanism of action, pituitary, E37
pituitary response to cyclic AMP, sex difference, E37
Granulosa cells
human chorionic gonadotropin, action, E218
pregnant mares serum gonadotropin, action, E218
Growth
intestinal, streptozotocin diabetes, E457
Growth hormone
amino acid transport, E316
protein turnover, skeletal muscle, E231
Guanosine monophosphate, cyclic
acetylcholine-stimulated pancreatic islets, E493
gonadotropin release stimulated by luteinizing hormone-releasing hormone, E586
ion transport, intestinal, E402
Guanosine 5′-phosphoric acid, cyclic
peptide action, pancreatic acinar cells (amphibian), E112

H$_1$ and H$_2$
receptor blockade, esophageal sphincter, lower (baboon), E42
Heart
erucic acid metabolism, E509
muscle: *see* Muscle, heart; Myocardium
myocytes, substrate oxidation, amino acid stimulation, E461
peptide-chain initiation, glucocorticoid effects, E134
protein synthesis, fasting, E126
Heidenhain pouch
hydrogen ion removal, mechanisms, E692
Hematopoietic cells
ketone utilization, fetal, E330
Heme protein: *see* Protein
Hemidiaphragm
amino acid transport, E316
Hemoglobin
demethylation in erythrocytes, E150
Hepatic artery
plasma flow, insulin and glucagon extraction, E88
Hepatocytes
ketone utilization, fetal, E330
Histamine
deoxyribonucleic acid synthesis, fundic mucosa, E32
oxyntic cell cyclic AMP and hydrochloric acid, gastric mucosa (bullfrog), E140
pharmacology, esophageal sphincter, lower (baboon), E42
Homeostasis
mineral, estrogen effects (chick), E338
Hormonal influences
gastric tissue, E422
Hormonal regulation
gluconeogenesis, E22, E295
phosphoenolpyruvate carboxykinase activity, brown fat, E197
Hormones
dosage, induction of liver enzymes, E374
gastrin release, antral, E410
receptors: *see* Receptors
Human chorionic gonadotropin: *see* Gonadotropin
Hybridization
DNA-RNA, dose-response curves, analysis, E97
Hydrochloric acid
cyclic AMP and, oxyntic cell, gastric mucosa (bullfrog), E140
Hydrocortisone
enzyme induction, liver, E374
Hydrogen ions
absorption, forestomach (llama), E1
removal from stomach and duodenum, different mechanisms, E692
β-Hydroxybutyrate
ketone body turnover and net ketone production, hepatic, E238
oxidation, fetal, E330
Hyperglycemia: *see* Obesity-hyperglycemia
Hyperinsulinemia
glucose transport, adipocytes, E53
insulin binding, adipocytes, E53
Hyperlipemia
erucic acid metabolism, E509
Hyperoxia
thyroid gland, E628
Hyperplasia
diet-induced adipocyte increase, E279
pancreatic, caerulein-secretin interaction, E714
Hyperthyroidism
creatine kinase, plasma clearance, E614
Hypertrophy
pancreatic, caerulein-secretin interaction, E714
Hypocalcemia
1,25-dihydroxyvitamin (cow), E634
parathyroid hormone (cow), E634
Hypophysectomy
protein turnover, skeletal muscle, E231
Hypothalamic obesity: *see* Obesity
Hypothyroidism
creatine kinase, plasma clearance, E614

Ileum
calcium transport, cellular and paracellular, E726
capillary fluid exchange, E429
capillary permeability, E429
lymph flow, solute-coupled transport and, E429
oncotic pressure, solute-coupled transport and, E429
Indomethacin
cation transport, gastric mucosal cells, E16
Infusion: *see also* specific subject and site
continuous, protein turnover, measurement with nitrogen-15, E165
Insulin
amino acid transport, diaphragm, newborn, E304
^{14}C-labeled pyruvates, incorporation into blood glucose, E22
clearance rate, plasma, in man, E577
extraction, hepatic, augmented secretion, E88
gluconeogenesis, E295
hypothalamic obesity, E266
intestinal nucleotide cyclases, E539
kinetics, model, E577
metabolism, postexercise, E255
myoelectrical activity, small bowel, E249
plasma, disappearance, in man, E577
plasma levels, amino acid transport and, diaphragm, in newborn, E304
postprandial disruption of migrating complex, E666
protein synthesis, initiation, skeletal muscle and heart, E126
receptors: *see* Receptors
sensitivity, adipocytes, hyperinsulinemia, E53
substrate cycling, E295
Insulin binding
adipocytes, in hyperinsulinemia, E53
adipocytes, streptozotocin diabetes, E175
negative cooperativity, E606
soleus muscle, anaerobiosis and ATP effects, E606
sugar transport and, correlation, E606
Insulin-glucagon ratio
molar, hepatic, E88
Insulin release
acetylcholine-stimulated pancreatic islets, E493
chloride fluxes and, interrelationship, pancreatic islets, E501
prandial, two stages, E103
Insulin secretion
β-cell transplantation, E119
fetal and newborn (sheep), E467
pancreatic islets (*ob/ob* mouse), E191
obese-hyperglycemic mice, E501
secretin and (pig), E381
vagotomy, truncular, E119
vasoactive intestinal polypeptide and (pig), E387
Interdigestive motor complex
test meals, disruptive effect, E661
Intestinal absorption
amino acids, in streptozotocin diabetes, E457
β-carotene, E686
cholinergic-adrenergic interactions, E402
chylomicron composition and, E183
diglycine, in streptozotocin diabetes, E457
pyridoxine hydrochloride, E272
solute-coupled transport and, E429
Intestinal adaptation
streptozotocin diabetes, E457, E699
Intestinal growth
streptozotocin diabetes, E457
Intestinal motility: *see* Motility
Intestinal mucosa
absorption: *see* Intestinal absorption
Intestinal secretion
cholinergic-adrenergic interactions, E402
Intestinal transport
amino acids, in vitamin B_6 deficiency, E316
calcium: *see* Calcium
folic acid, E678
ions, cholinergic-adrenergic interactions, E402

Intestine, large
calcium transport, in diabetes, E699
Intestine, small
Auerbach's plexus stimulation, polarity of effects on longitudinal muscle, E345
Escherichia coli, toxigenic and nontoxigenic, myoelectrical activity, E311
folic acid transport, E678
law of the intestine, E345
myoelectrical activity, somatostatin and, E249
prednisolone-induced epithelial lesions, prevention by prostaglandin E_2, E703
Intestines
development, postnatal, E451
nucleotide cyclases, subcellular distribution, epithelial, E539
Inulin
biliary clearance rates, E570
Ions
content, esophageal smooth muscle (opossum), E709
flux, gastric mucosa, E7
Ions, transport
cholinergic-adrenergic interactions, intestinal, E402
ethanol effects, gastric mucosa, E7
parallel pathways, gastric mucosa, E7
Islets of Langerhans: *see* Pancreatic islets
Isoprenaline
lingual lipase activity and, E416
Isotope dilution
constant-infusion method, glucose-lactate interrelations (sheep), E487

Jejunum
pyridoxine hydrochloride, absorbed, phosphorylation and dephosphorylation, E272
sucrase activity, circadian rhythm, development, E437

Keto acid
branched chain, transamination, isolated perfused kidney, E47
3-Ketoacid CoA-transferase
ketone utilization, fetal hepatocyte, E330
Ketone bodies
turnover, hepatic, fasting and diabetes, E238
Ketones
production, hepatic, fasting and diabetes, E238
utilization, fetal hypatocyte, E330
Kidney
branched-chain keto acids, transamination, E47
gluconeogenesis, high protein diet and, E261
glutamine metabolism, high protein diet, E261
prostaglandins E_2 and $F_{2\alpha}$, excretion, E624
vitamin D hydroxylases, estrogen effects (chick), E338

Lactase
jejunal activity, during development, E451
Lactate
arterial plasma concentration (sheep), E487
glucose and, interrelations (sheep), E487
metabolism, lung, perfused, E619
metabolism, postexercise, E255
oxidation, cardiac myocytes, amino acid stimulation, E461
Langerhans' islets: *see* Pancreatic islets
Laplace transforms
numerical inversion, hepatic transport kinetics and plasma disappearance curves, E648
Lecithin
infusion, chylomicron composition, duodenal, E183
Leucine
release, renal, keto acids and, E47
Leydig cells
human chorionic gonadotropin, action, E218
pregnant mares serum gonadotropin, action, E218
Ligands
zinc-binding, in milk, E556
Linoleic acid
erucic acid metabolism and, E509
Lipase
caerulein-secretin interaction, trophic effects, pancreas, E714
enzyme activity and secretion, tongue, E416
Lipids
chylomicrons, lymph, E183
transport, intestinal, E686
Lipoprotein lipase
metabolism, erucic acid and, E509
Litorin
pancreatic acinar cells (amphibian), E112
Liver
bicarbonate in bile salt-independent fraction of bile flow, E158
enzymes, glucocorticoid induction, E374
erucic acid metabolism, E509
glucagon extraction, augmented secretion, E88
glucocorticoid induction of tryptophan oxygenase and tyrosine aminotransferase, E374
gluconeogenesis, effects of glucose load, E354
gluconeogenic intermediates, E354
glucose metabolism, postexercise, E255
glucose output, E88
glycogen formation, E354
glycogen synthetase, E354
insulin extraction, augmented secretion, E88
insulin-glucagon molar ratio, E88
ketone production, fasting and diabetes, E238
ketone utilization, fetal, E330
ornithine transcarbamoylase, in zinc deficiency, E203
phosphorylase, gluconeogenesis and, E354
transport kinetics, and plasma disappearance curves, modeling exposing errors in conventional approach, E648
Load
glucose: *see* Glucose
Lung
lactate metabolism, E619
Luteinizing hormone
gonadotropin release, E586
response to luteinizing hormone-releasing hormone and cyclic AMP, sex difference, E291
Luteinizing hormone-releasing hormone
activity, sex differences, E291
gonadotropin release, E586
Lymph chylomicrons
lipid composition, E183
Lymph flow
solute-coupled transport, effects, ileal, E429
Lysosomes
protein turnover, thyroxine effects, skeletal muscle, E231

Malate-aspartate shuttle
cardiac myocytes, E461
Mannitol
flux, transmural, gastric mucosa, E7
Mass
skeletal, postmenopausal women, E82
Meals: *see* Feeding
Membranes
biliary canalicular, permselectivity, E570
nonpituitary, gonadotropin-releasing hormone, binding, E227
potentials: *see* Potentials
Menopause
osteoporosis, postmenopausal, estrogen and, E338
skeletal mass, postmenopausal, E82
Metabolic clearance rate
arginine vasopressin, E591, E598
Metabolic patterns
transplanted β-cells, E119
vagotomy, truncular, E119
Metabolism: *see* specific site and subject
Metanephrine
demethylation, erythrocytes, E150
Methemoglobin
demethylation, erythrocytes, E150
Methoxyinulin
biliary clearance rates, E570
3-*O*-Methyldopa
demethylation, erythrocytes, E150
4-*O*-Methyldopa
demethylation, erythrocytes, E150
Metiamide
oxyntic cell cyclic AMP and hydrochloric acid, gastric mucosa (bullfrog), E140
prostaglandins-adenylate cyclase-cyclic AMP interactions, gastric mucosa, E546
Micellar components
β-carotene, intestinal absorption, E686
Migrating complex
gastrin and, E666
insulin and, E666
postprandial disruption, E661, E666
Milk
zinc-binding ligands, E556
Milk fever
1,25-dihydroxyvitamin D and parathyroid hormone, plasma levels (cow), E634
Minerals
bone content, postmenopausal, E82
homeostasis, estrogen effects (chick), E338
Miniature transducer: *see* Transducers

Mitochondria, renal
ammoniagenesis, high protein diet, E261
Models
assay precision, plasma insulin, disappearance, in man, E577
compartmental analysis, hepatic transport kinetics and plasma disappearance, E648
compartmental analysis, insulin, plasma disappearance, in man, E577
dose-response curves, sigmoidal, simultaneous analysis, E97
hepatic transport kinetics and plasma disappearance curves, errors in conventional approach, E648
insulin, plasma, disappearance in man, E577
Laplace transforms, numerical inversion, hepatic transport kinetics and plasma disappearance curves, E648
mathematical, arginine vasopressin metabolism, E598
systems analysis, arginine vasopressin metabolism, E598
Monitoring
intestinal motility, miniature transducer for, E532
Motility
Escherichia coli, toxigenic and nontoxigenic, small intestine, E311
gastric and duodenal, relationship (chicken), E670
miniature transducer, intestinal, E532
small intestine (chicken), E670
somatostatin effects, small bowel, E249
vagal control, gastric, E366
Motor complex
interdigestive, test meal disruptive effect, E661
Mucosa: *see* site
Muscarinic receptors: *see* Receptors
Muscle
contraction, vagal stimulation, esophagus, E63
glycogen metabolism, postexercise, E255
longitudinal, intestinal, Auerbach's plexus stimulation, polarity of effects, E345
soleus, insulin binding, E606
Muscle, heart
peptide-chain initiation, glucocorticoid effects, E134
protein synthesis, fasting, E126
Muscle, skeletal
peptide chain initiation, glucocorticoid effects, E134
protein synthesis, fasting, E126
protein turnover, thyroxine effects, E231
Muscle, smooth
angiotensin receptor, esophageal (opossum), E738
bethanechol and progesterone, mechanical effects, antral and gastroduodenal junction, E422
cholecystokinin effects, gastric, E324
contraction, vagal stimulation-induced, esophageal (opossum), E392
potassium content, esophageal (opossum), E709
potentials: *see* Potentials
Mustard seed oil
erucic acid metabolism and, E509
Myocytes, cardiac
substrate oxidation, amino acid stimulation, E461
Myoelectrical activity
Escherichia coli, toxigenic and nontoxigenic, small intestine, E311
interdigestive motor complex, E661
migrating complex, E666
somatostatin effects, small bowel, E249

Necrotic ulcers
prednisolone-induced, intestinal, prevention by prostaglandin E_2, E703
Neomycin
prednisolone-induced intestinal lesions, E703
Nerve-muscle pathways
polarity, E345
Nerve suture technique
efferent vagal fibers, discharge, gastric antrum, E366
Neurotransmitters
synaptosomal triiodothyronine and thyroxine, E638
Neutron activation analysis
total body, postmenopausal, E82
Newborn
amino acid transport, E304
corticosterone, plasma concentrations during development, E451
α-fetoprotein (ovine), E27
galactosyltransferase, colonic, E213
insulin secretion (sheep), E467
intestinal development, E451
lactase, jejunal activity, E451
sucrase, jejunal activity, E451
zinc, intestinal absorption, E556
zinc-binding ligand in milk, E556
Nicotinic receptors: *see* Receptors
Nitrogen-15
protein turnver, measurement, E165
Norepinephrine
demethylation, erythrocytes, E150
Nucleotide cyclases
subcellular distribution, intestinal epithelium, E539
Nucleotides, cyclic
gonadotropin release, stimulated by luteinizing hormone-releasing hormone, E586
Numerical inversion
Laplace transforms, hepatic transport kinetics and plasma disappearance curves, E648
Nutrition: *see* Feeding, or the specific dietary constituent

Obesity
fat cell increase, diet-induced, E279
hypothalamic, pancreatic β-cell transplantation, E266
Octanoate
oxidation, cardiac myocytes, amino acid stimulation, E461
Oleic acid
erucic acid metabolism and, E509
Oncotic pressure: *see* Pressure
Organ culture
antral, gastrin release, E410
Organogenesis
colon, E207
Ornithine transcarbamoylase
hepatic, activity, zinc deficiency, E203
Osmolality, urine
arginine vasopressin metabolism, E591
prostaglandin excretion, renal, E624
Osteoporosis
postmonopausal, estrogen and, E338
Ouabain
cation transport, gastric mucosal cells, E16
Oxidation
β-hydroxybutyrate, fetal, E330
substrate, cardiac myocytes, amino acid stimulation, E461
Oxygen
exposure, thyroid gland, E628
toxicity, thyroid gland, E628
utilization, cardiac myocytes, amino acid stimulation, E461
Oxyntic cells
cyclic AMP formation and hydrochloric acid secretion, dissociation, gastric mucosa (bullfrog), E140
Oxyntic gland mucosa
deoxyribonucleic acid synthesis, E565

Pancreas
exocrine, secretagogue action, E517
exocrine secretion, vasoactive intestinal polypeptide effects (pig), E387
glucagon: *see* Glucagon
insulin: *see* Insulin
polypeptide release, mechanics, E443
polypeptide response to meal, atropine and vagotomy effects, E443
secretin, secretory effects (pig), E381
size and composition, caerulein-secretin interaction, E714
transplantation, prandial insulin release, E103
vasoactive intestinal polypeptide, secretory effects (pig), E387
Pancreatic acinar cells
amylase release, kinetics, E743
peptides, isolated from skin, effects (amphibian), E112
Pancreatic acini
amylase release, kinetics, E743
secretagogues, action, E517
secretory actions, E517
Pancreatic β-cells
acetylcholine stimulation, E493
chloride fluxes-insulin release, interrelationship, E501
transplantation, feeding and metabolic patterns, E119
transplantation, hypothalamic obesity, E266
Pancreatic islets
acetylcholine-stimulated, E493
calcium-45 efflux, glucose inhibition (*ob/ob* mouse), E191
chloride flux-insulin release, interrelationship, obese-hyperglycemic mice, E501
cholinergic effects, E493
culture (*ob/ob* mouse), E191
Papaverine
oxyntic cell cyclic AMP and hydrochloric acid, gastric mucosa (bullfrog), E140
Parathyroid hormone
plasma levels, paresis (cow), E634
Paresis, parturient
1,25-dihydroxyvitamin D and parathyroid hormone plasma levels (cow), E634
Parturition: *see* Pregnancy

Pavlov pouch
bicarbonate secretion and solute absorption (llama), E1
Penicillamine
amino acid transport, E316
Pentagastrin
esophageal sphincter, lower, responses (baboon), E42
oxyntic cell cyclic AMP and hydrochloric acid, gastric mucosa (bullfrog), E140
Peptides
chain, initiation, skeletal muscle and heart, glucocorticoid effects, E134
isolated from skin, action on pancreatic acinar cells (amphibian), E112
vasoactive intestinal: *see* Vasoactive intestinal peptide
Peptone
gastrin release, antral, E410
Perfusate
flow rate, β-carotene intestinal absorption, E686
Perfusion: *see* specific subject or site
Peristalsis
esophageal, vagal stimulation-induced (opossum), E392
Permeability
capillary, ileal, E429
Permselectivity
biliary canalicular membrane, E570
pH
β-carotene, intestinal absorption, E686
pH stat
hydrogen ion removal, stomach and duodenum, E692
Phosphoenolpyruvate carboxykinase
activity, brown fat, glucocorticoid regulation, E197
activity, white adipose tissue, E197
glutamine metabolism, renal, E261
Phosphofructokinase
hormonal regulation of gluconeogenesis, E295
Phospholipids
chylomicron composition, duodenal, E183
metabolism, erucic acid and, E509
Phosphorus
plasma levels, paresis (cow), E634
Phosphorylase
liver, gluconeogenesis and, E354
Phosphorylation
pyridoxine hydrochloride, absorbed, jejunal, E272
Photon absorptiometry
skeletal mass, postmenopausal women, E82
Physalaemin
pancreatic acinar cells (amphibian), E112
Pituitary gland
cyclic AMP response to gonadotropin-releasing hormone, sex difference, E37
monolayer cultures, luteinizing hormone activity, sex differences, E291
Pituitary gonadotropin: *see* Gonadotropin
Plasma
constituents: *see* specific constituent
disappearance curves, model exposing errors in conventional approach, E648
Plasma flow
hepatic artery, insulin and glucagon extraction, E88
portal vein, insulin and glucagon extraction, E88
PMSG: *see* Gonadotropin, pregnant mares serum
Polarity
nerve-muscle pathways, intestinal, E345
Polymyxin B
prednisolone-induced intestinal lesions, E703
Polypeptide
pancreatic, response to meal, atropine and vagotomy effects, E443
release, pancreatic, mechanics, E443
vasoactive intestinal: *see* Vasoactive intestinal polypeptide
Polyphloretin phosphate
prostaglandin-adenylate cyclase-cyclic AMP interaction, gastric mucosa, E546
Portal vein
insulin, plasma disappearance, in man, E577
plasma flow, insulin and glucagon extraction, E88
Postnatal development: *see* Newborn
Postmenopause: *see* Menopause
Potassium
content, regional differences, esophageal smooth muscle (opossum), E709
Potassium ions
transport, gastric mucosal cells, E16
Potentials
membrane, acetylcholine-stimulated pancreatic islets, E493
membrane, chloride flux-insulin release, pancreatic islets, E501
smooth muscle, gastric and duodenal motility (chicken), E670
Pouch: *see* Heidenhain pouch; Pavlov pouch
Prednisolone
lesions, intestinal, prevention (cytoprotection) by prostaglandin E_2, E703
Pregnancy: *see also* Fetus
estradiol, dehydroepiandrosterone and its sulfate, effects (baboon), E78
estrogen precursors (baboon), E78
fasting, fetal and newborn insulin secretory response (sheep), E467
α-fetoprotein, fetal-maternal distribution (ovine), E27
parturition paresis, 1,25-dihydroxy-vitamin D and parathyroid hormone plasma levels (cow), E634
Pregnant mares serum gonadotropin: *see* Gonadotropin
Preincubation
amino acid transport, E304
Pressor response
arterial, angiotensin metabolism, adrenocortical, with adrenal transplants (sheep), E525
Pressure
applied, and net water flux, gastric mucosa (frog), E361
gastric balloon , intestinal motility monitoring, E532
intragastric, gastric emptying and secretion, E552
oncotic, solute-coupled transport, ileal, E429
Progesterone
mechanical responses to bethanechol, antral and gastroduodenal smooth muscle, E422
Prostaglandin A_2
interaction with adenylate cyclase-cyclic AMP system, gastric mucosa, E546
Prostaglandin E_2
excretion, renal, E624
interaction with adenylate cyclase-cyclic AMP system, gastric mucosa, E546
prednisolone-induced intestinal lesions, prevention, E703
Prostaglandin $F_{2\alpha}$
excretion, renal, E624
Prostaglandin inhibitor
gastric mucosa, E546
Prostaglandins
cation transport, gastric mucosal cells, E16
interaction with adenylate cyclase-cyclic AMP system, gastric mucosa, E546
Protein
caerulein-secretin interaction, trophic effects, pancreas, E714
degradation, thyroxine effects, skeletal muscle, E231
dietary, glutamine metabolism, renal, E261
heme, demethylation, erythrocytes, E150
serum, fetal (ovine), E27
Protein synthesis
adrenal medulla (bovine), E475
glucocorticoid effects, skeletal muscle and heart, E134
gluconeogenesis and, E22
initiation in fasting, skeletal muscle and heart, E126
insulin effects, E22
thyroxine effects, skeletal muscle, E231
Protein turnover
dose regimens, E165
end products, E165
measurement ^{15}N-labeled glycine, E165
thyroxine effects, skeletal muscle, E231
Provitamin A
absorption, intestinal, E686
Pyridoxine hydrochloride
absorbed, phosphorylation and dephosphorylation, jejunal, E272
Pyruvates
^{14}C-labeled, incorporation into blood glucose, insulin and fasting effects, E22

Radioautography
glycoprotein synthesis, fetal colon, E207
Radioimmunoassay
dose-response curves, sigmoidal, simultaneous analysis, E97
α-fetoproteins, fetal-maternal distribution (ovine), E27
pancreatic polypeptide release, E443
Radioligand assay
dose-response curves, sigmoidal, simultaneous analysis, E97
Radionuclide studies: *see* specific subject and site
Receptors
α-adrenergic, ion transport, intestinal, E402
angiotensin, esophageal smooth muscle (opossum), E738
arginine vasopressin metabolism, E591

gonadotropin-releasing hormone, nonpituitary tissues, E227
H_1 and H_2, blockade, esophageal sphincter, lower, (baboon), E42
hormone, dose-response curves, sigmoidal, simultaneous analysis, E97
insulin, adipocytes, E53
insulin, streptozotocin diabetes, E175
muscarinic, ion transport, intestinal, E402
nicotinic, ion transport, intestinal, E402
Respiration, tissue
oxyntic cells, gastric mucosa, cyclic AMP and hydrochloric acid in (bullfrog), E140
Rhythm, circadian
feeding and metabolic patterns after vagotomy and β-cell transplantation, E119
jejunal sucrase activity, development, E437
Ribonucleic acid
caerulein-secretion interaction, trophic effects, pancreas, E714
deoxyribonucleic acid and, hybridization, dose-response curves, E97
protein turnover, skeletal muscle, E231
Rubidium ions
transport, gastric mucosal cells, E16

Secretagogues
pancreatic acinar responses, E517
Secretin
amylase release, pancreatic acini, E743
caerulein and, interaction on pancreatic size and composition, E714
secretory effects, isolated perfused pancreas (pig), E381
Sensitivity: *see* specific subject and site
Serous glands, lingual: *see* Tongue
Sex differences
luteinizing hormone response to luteinizing hormone-releasing hormone, E291
pituitary cyclic AMP response to gonadotropin-releasing hormone, E37
Sex hormones
1α,25-dihydroxyvitamin D_3, serum (chick), E338
vitamin D hidroxylases, renal (chick), E338
Shell formation
estrogen effects (chick), E338
Skeletal mass
postmenopausal women, E82
Skeletal muscle: *see* Muscle, skeletal
Skin
peptides, pancreatic acinar cell responses (amphibian), E112
Smooth muscle: *see* Muscle, smooth
Sodium
flux, transmural, gastric mucosa, E7
Sodium-calcium exchange
cellular and paracellular, ileum, E726
dietary calcium and, ileum, E726
Sodium gradient hypothesis
folic acid transport, small intestine, E678
Sodium ions
transport, gastric mucosal cells, E16
Soleus muscle
insulin binding, anaerobiosis and ATP effects, E606
Solute-coupled fluid transport, ileal, E429
Solutes
absorption, forestomach (llama), E1
Somatostatin
myoelectrical activity, small bowel, E249
Sphincter, esophageal: *see* Esophageal sphincter
Splanchnic glucose: *see* Glucose
Starvation: *see* Fasting
Stomach: *see also* Gastric
antiperistalsis (chicken), E670
antrum: *see* Antrum
bicarbonate secretion, cardiac region (llama), E1
bicarbonate secretion, forestomach (llama), E1
cell proliferation, deoxyribonucleic acid synthesis and, E565
fundic mucosa: *see* Fundic mucosa
hydrogen ion removal, different mechanisms, E692
intragastric pressure: *see* Pressure
motility: *see* Motility
solute absorption, cardiac region (llama), E1
solute absorption, forestomach (llama), E1
volume-pressure relations, E552
Strain-gauge transducer: *see* Transducers
Streptozotocin diabetes: *see* Diabetes
Substrates
cardiac myocytes, amino acid stimulation, E461
cycling, hormonal control of gluconeogenesis, E295
Sucrase
circadian rhythm activity, jejunal, development, E437
jejunal activity, during development, E451
Sugar
transport and insulin binding, correlation, E606
Synaptosomes
brain, triiodothyronine and thyroxine, E638
Systems analysis: *see* Models; *see also* specific subject and site

Test meals: *see* Feeding
Testosterone
luteinizing hormone activity, sex differences, E291
Theophylline
oxyntic cell cyclic AMP and hydrochloric acid, gastric mucosa (bullfrog), E140
Thyroid gland, function
oxygen toxicity, E628
plasma creatine kinase clearance and, E614
Thyroid hormones
brain synaptosomes, E638
Thyroidectomy
protein turnover, skeletal muscle, E231
Thyroxine
^{125}I-labeled, brain synaptosomes, E638
metabolism, synaptosomal, E638
protein turnover, skeletal muscle, E231
utilization, oxygen toxicity and, E628
Tissue: *see also* specific site
brown adipose: *see* Brown fat
nonpituitary, gonadotropin-releasing hormone, membrane binding, E227
respiration: *see* Respiration
white adipose: *see* Adipose tissue
Tongue
lipase, enzyme activity and secretion, E416
serous glands, lipase activity, E416
Toxicity
oxygen: *see* Oxygen toxicity
Tracers: *see* specific subject and site
Transamination
branched-chain keto acids, kidney, E47
Transducers
miniature, intestinal motility in unrestrained chronic rats, E532
strain-gauge, intestinal motility, E532
Transit time analysis
insulin, plasma, in man, E577
Transmitters: *see* Neurotransmitters
Transplant
adrenal, angiotensin metabolism (sheep), E525
Transplantation
pancreatic, prandial insulin release, E103
pancreatic β-cells, E119, E266
Transport kinetics: *see* specific subject and site
Triglyceride
infusion, chylomicron composition, duodenal, E183
metabolism, erucic acid and, E509
transport, duodenal, E183
Triiodothyronine
^{125}I-labeled, brain synaptosomes, E638
Trypsinogen
caerulein-secretin interaction, trophic effects, pancreas, E714
Tryptophan oxygenase
glucocorticoid induction, liver, E374
Tyrosine aminotransferase
glucocorticoid induction, liver, E374

Ulcers
necrotic, prednisolone-induced, intestinal, protection by prostaglandin E_2, E703
Urea
protein turnover measurement, end product, E165
Urea cycle enzymes
zinc deficiency, E203
Urecholine
gastrin release, in gastric fistula, E720
Urinary constituents or excretion: *see* specific subject
Urine
osmolality: *see* Osmolality

Vagal-cholinergic control
pancreatic polypeptide release, E443
Vagal denervation
deoxyribonucleic acid synthesis, fundic mucosa, E32
Vagal fibers, efferent
discharge, gastric antrum, E366
Vagal stimulation
esophageal contractions (opossum), E392
esophageal responses, E63
Vagotomy
bilateral cervical, angiotensin receptor, esophageal (opossum), E738
deoxyribonucleic acid synthesis, gastric mucosa, E565
fundic, gastrin release, E720

Vagotomy (*continued*)
pancreatic polypeptide response to a meal, E443
truncular, feeding and metabolic patterns, E119
Vagus nerve
deoxyribonucleic acid synthesis, gastric, E565
gastric motility, control, E366
gastrin release, in gastric fistula, E720
hypothalamic obesity, E266
insulin release, prandial, two stages, E103
Vasoactive intestinal peptide
amylase release, pancreatic acini, E743
intestinal nucleotide cyclases and, E539
Vasoactive intestinal polypeptide
secretory effects on pancreas (pig), E387
Vasopressin
prostaglandins E_2 and $F_{2\alpha}$, excretion, renal, E624
Vasopressin, arginine
constant infusion, E591
metabolic clearance rate, E591, E598
metabolism, modeling and systems analysis, E598
metabolism, receptor-mediated mechanism, E591
pulse injection, E591
Vitamin B_6
absorbed, jejunal metabolism, E272
deficiency, amino acid transport, E316
Vitamin D
calcium transport, ileum, E726
Vitamin D hydroxylases
estrogen effects, renal (chick), E338
Vitamins
water-soluble, intestinal transport, E678
Voltage clamp
calcium transport, ileum, E726
Volume-pressure relations
gastric, E552

Water
absorption, forestomach (llama), E1
filtration, gastric mucosa (frog), E361
flux, gastric mucosa (frog), E361
Weaning
circadian rhythm of jejunal sucrase activity, E437
prevention, sucrase, jejunal, circadian rhythm, E437
White adipose tissue: *see* Adipose tissue

Zinc
deficiency, liver ornithine transcarbamoylase activity, E203
deficiency, plasma ammonia activity, E203
intestinal absorption, zinc-binding ligands in milk, E556
metabolism, E203
Zinc-65
intestinal absorption, zinc-binding ligand in milk, E556
Zinc-binding ligands
intestinal absorption of zinc, E556
Zymogen granules
lingual lipase, enzyme activity and secretion, E416

Author Index to Volume 4

Abesamis, C., E82
Adibi, S. A., E457
Akanuma, Y., E175
Aloia, J. F., E82
Anand, R. S., E448
Arndorfer, R. C., E63, E392

Bahl, O. P., E218
Bass, P., E532
Battaglia, F. C., E467
Batzri, S., E743
Beam, H. E., E437
Beeuwkes, R., III, E624
Behsudi, F. M., E422
Berggren, P.-O., E191
Bloom, G., E88
Blum, A. L., E16
Bradley, S. E., E570
Bray, G. A., E266
Brosnan, J. T., E261
Brown, F. C., E42
Bruce, L. A., E422
Buitrago, A., E191
Burns, A. H., E461
Burns, T. W., E311

Carlson, G. M., E311
Carson, B. S., E467
Carter, D. C., E443
Castell, D. O., E42
Chan, W., E47
Chandrasena, L. G., E487
Chenoweth, M., E295
Cherrington, A. D., E238
Chew, C. S., E140
Chez, R. A., E78
Chou, M. C. Y., E88
Christakos, S., E218
Christensen, J., E392, E709
Christenson, R. K., E448
Clark, S. B., E183
Cohen, E. B., E63
Cohn, S. H., E82
Colston, K. W., E338
Conlon, T. P., E112
Cooke, A. R., E7
Copeland, E. M., E32
Coy, D. H., E249
Crutchfield, F. L., E638

Danhof, I. E., E422
Dawson, D. C., E7
De Lean, A., E97
DeLuca, H. F., E634
Dencker, H., E577
Dent, J., E392
De Wever, I., E661, E666
Dodds, W. J., E63, E392
Dormer, R. L., E517
Dousa, T. P., E546
Dozois, R. R., E546
Dratman, M. B., E638
Dubois, A., E42
Duncan, J. R., E556
Dunn, A., E295
Dunn, M. J., E624

Eeckhout, C., E661, E666
Elashoff, J., E714
Ellis, K., E82

Engelhardt, W. V., E1
Erickson, G., E218
Erspamer, V., E112
Eskew, M. L., E619
Espiner, E. A., E525

Fahrenkrug, J., E381, E387
Faust, I. M., E279
Fawcett, C. P., E586
Feldman, D., E197
Felig, P., E255, E287
Field, J. B., E88
Fischer, J. A., E16
Fisher, D. A., E591, E598
Flaim, K. E., E231
Forker, E. L., E648

Gagerman, E., E493
Galton, V. A., E628
Gardner, J. D., E112, E743
Garlick, P. J., E165
Genton, M. J. H., E532
Gibson, R. G., E720
Go, V. L. W., E324
Golden, M. H. N., E165
Gould, M. K., E606
Granger, D. N., E429
Greely, H. P., E624
Grossman, M. I., E552, E560, E714
Gurll, N. J., E692
Gutowski, J., E218
Gylfe, E., E191

Hajjar, J.-J., E709
Hall, B., E261
Hammarström, K., E191
Hamosh, M., E416
Hardison, W. G. M., E158
Harmon, J. W., E692
Hart, D. S., E525
Haussler, M. R., E338
Hay, D. M., E27
Heber, D., E227
Heindel, J. J., E316
Hellemans, J., E661, E666
Hellman, B., E191
Henning, S. J., E437, E451
Hersey, S. J., E140
Herz, R., E570
Hirsch, J., E279
Hirschowitz, B. I., E720
Hirst, M., E197
Hogan, W. J., E63
Hollander, D., E686
Holst, J. J., E381, E387
Horst, R. L., E634
Hurley, L. S., E556

Idahl, L. -A., E493
Impicciatore, M., E443
Inoue, S., E266
Iwamoto, Y., E175

Jaspan, J. B., E88
Jefferson, L. S., E126, E134, E231
Jensen, S. L., E381, E387
Johnson, L. R., E32, E565
Johnson, P. R., E279
Jorgensen, N. A., E634

Kako, K. J., E509
Karlsberg, R. P., E614
Kasuga, M., E175
Keller, U., E238
Kilpatrick, D., E475
Kim, N. K., E546
Kimberg, D. V., E726
Kinter, L. B., E624
Kirshner, N., E475
Kobayashi, M., E53
Koch, M. J., E678
Koch, Y., E37
Koehler, R. R., E330
Koelz, H. R., E16
Konturek, S. J., E249
Korc, M., E517
Kosaka, K., E175
Król, R., E249
Kühl, C., E381

Lai, P. C. W., E27
LaMont, J. T., E207, E213
Lancaster, C., E703
Leavitt, L., E738
Ledbetter, F. H., E475
Li, J. B., E231
Lichtenberger, L. M., E410
Liljenquist, J. E., E238
Lorscheider, F. L., E27
Louis-Sylvestre, J., E103, E119
Lun, S., E525
Luxon, B., E648

MacIntyre, I., E338
Maehlum, S., E255
Marshall, J. C., E227
Martin, J. L., E311
Mathias, J. R., E311
May, R. J., E112
McCann, S. M., E586
McPhee, P., E261
Mears, G. J., E27
Meidan, R., E37
Meissner, H. P., E493
Meschia, G., E467
Meyer, J. H., E560
Middleton, H. M., III, E272
Miolan, J.-P., E366
Mircheff, A. K., E539
Mitch, W. E., E47
Morgan, K. G., E324
Morris, S. M., E402
Motz, K. L., E304
Moyle, W. R., E218
Mukhopadhyay, A. K., E738
Mullen, Y. S., E266
Munson, P. J., E97

Nahrwold, D. L., E678
Naor, Z., E37, E586
Nellans, H. N., E726
Nielsen, O. V., E381, E387

Odell, W. D., E227
Olefsky, J. M., E53
Owen, C. A., Jr., E150
Ozaki, T., E354

Parry, D. M., E261
Pascaud, X. B., E532
Peeters, T., E666
Pegg, A. E., E126, E134

Peikin, S. R., E743
Pepe, G. J., E74, E78
Petersen, H., E714
Petith, M. M., E699
Phillips, A. F., E467
Pike, J. W., E338
Powell, D. W., E402
Prasad, A. S., E203
Prior, R. L., E448

Rabbani, P., E203
Rampal, P., E207
Rannels, D. E., E126, E134
Rannels, S. R., E126, E134
Reddy, W. J., E461
Reilly, P. E. B., E487
Rhoades, R. A., E619
Riggs, T. R., E304, E316
Robert, A., E703
Roberts, R., E614
Roche, M., E670
Rodbard, D., E97
Röjdmark, S., E88
Roman, C., E366
Rose, R. C., E678
Ross, P., E82
Rottman, A. J., E743
Rous, S., E22
Ruble, P. E., Jr., E686
Rübsamen, K., E1
Ruckebusch, Y., E670
Ryan, G. P., E32, E565

Sacca, L., E287
Sachs, G., A16
Sage, H. L., E475
Schaffalitzky de Muckadell, O. B., E381, A387
Schally, A. V., E249
Schedl, H. P., E457, E699
Schmalz, P. F., E324
Schulze, K., E709
Schut, H. A. J., E74, E78
Sehlin, J., E500
Sekeris, C. E., E374
Shambaugh, G. E., III, E330
Sharpless, N. S., E150
Shaw, M. E., E619
Sherwin, R., E287
Shields, R. P., E311
Shikama, H., E345
Shorey, J. M., E410
Solomon, T. E., E560, E714
Spanos, A., E338
Sperling, M. A., E448
Stef, J. J., E63
Stern, J. S., E279
Stewart, E. T., E63
Strunz, U. T., E552
Szurszewski, J. H., E324

Täljedal, I.-B., E493
Tang, L. K. L., E291
Tapper, E. J., E402
Taylor, A. E., E429
Taylor, I. L., E443
Thor, P., E249
Townsley, J. D., E74, E78
Tranberg, K. G., E577
Trier, J. S., E207, E410
Tyce, G. M., E150

Ui, M., E345

Valtin, H., E624
Van Os, C. H., E539
Van Petten, G. R., E27
Vantrappen, G., E661, E666
Vasdev, S. C., E509
Vaswani, A., E82
Ventola, A., E213
Villegas, L., E361
Voigt, J., E374

Wahren, J., E255
Wali, S., E619
Walling, M. W., E539
Walsh, J. H., E443
Waterlow, J. C., E165
Weitzman, R. E., E591, E598
Wenger, J., E457
Williams, J. A., E517
Wilson, K. C., E598
Wise, H. D., E304
Wood, C. A., E158
Wood, J. D., E392
Woods, M., E692
Wright, E. M., E539

Yokoo, H., E330
Yokoyama, S., E354
Yu, K. T., E606

Zanzi, I., E82
Zor, U., E37